THE EFFECTIVENESS OF IDB'S FOREIGN AID ON ECONOMIC GROWTH: AN EMPIRICAL STUDY OF AFRICAN MUSLIM COUNTRIES

MUSTAFA DAUD

DOCTOR OF PHILOSOPHY
UNIVERSITI UTARA MALAYSIA
August 2012

THE EFFECTIVENESS OF IDB'S FOREIGN AID ON ECONOMIC GROWTH: AN EMPIRICAL STUDY OF AFRICAN MUSLIM COUNTRIES

By
MUSTAFA DAUD

Thesis Submitted to the
Othman Yeop Abdullah Graduate School of Business,
Universiti Utara Malaysia,
in Fulfillment of the Requirement for the Degree of Doctor of Philosophy

PERMISSION TO USE

In presenting this thesis in fulfilment of the requirements for a Post Graduate degree from the Universiti Utara Malaysia (UUM), I agree that the Library of this university may make it freely available for inspection. I further agree that permission for copying this thesis in any manner, in whole or in part, for scholarly purposes may be granted by my supervisor or in his absence, by the Dean of Othman Yeop Abdullah Graduate School of Business where I did my thesis. It is understood that any copying or publication or use of this parts of it for financial gain shall not be allowed without my written permission. It is also understood that due recognition shall be given to me and to the UUM in any scholarly use which may be made of any material in my thesis.

Request for permission to copy or to make other use of materials in this thesis in whole or in part should be addressed to:

Dean of Othman Yeop Abdullah Graduate School of Business
Universiti Utara Malaysia
06010 UUM Sintok
Kedah-DarulAman

ABSTRACT

The Islamic Development Bank (IDB) is the most leading and prominent Islamic multilateral financial and development institution in the Muslim world. Yet, with its foreign aid activities in almost four decades in various parts of the world, especially in the African continent; it is surprising to note that no empirical study is available on the impact of its foreign aid activities in Africa, particularly the African Muslim Countries (AMCs). The AMCs constitute more than two-third of the member countries of IDB from Africa. Therefore, this study provides empirical evidences from AMCs like Algeria, Egypt, Gambia, Morocco, Nigeria, Senegal, Tunisia and a host of others, on the role of IDB in accounting for growth in these countries spanning 1987-2010 through balanced panel data. Also, this study examined the nature of causality existing between foreign aid and corruption in AMCs. This is in view of the endemic prevalence of corruption in Africa. Hence, Simultaneous Equations Model (SEM) was adopted as the base model; while OLS, 3SLS and Seemingly Unrelated Regressions Estimate (SURE) methods were utilized for its estimation. On the other hand, Autoregressive Distributed Lag (ARDL) approach based on Cointegration and Granger-causality tests were used to estimate for corruption-aid nexus. Evidently, the findings from this study revealed that the foreign aid activities of IDB positively impact on the economic growth of AMCs via investment as the major transmission channel and it thus confirm the aid effectiveness hypothesis. Also, the nature of causality between corruption and foreign aid is both in the short and long-run; and our findings establish that countries like Morocco and Nigeria are victims of corruption trap. Basically, this study is perhaps the first of its kind to empirically investigate the impact of the foreign aid activities of IDB in Africa.

Key words: Islamic Development Bank, Foreign Aid, Simultaneous Equations Model, Economic Growth, African Muslim Countries

ABSTRAK

Bank Pembangunan Islam (IDB) adalah institusi kewangan dan pembangunan multilateral Islam yang utama dan unggul dalam dunia Islam. Namun, dengan aktiviti bantuan asing yang diceburinya selama hampir empat dekad di pelbagai pelusuk dunia, terutamanya di benua Afrika, agak menghairankan bahawa tiada kajian empirik yang didapati tentang kesan bantuan asing yang diberikannya kepada Afrika, terutamanya kepada *African Muslim Countries* (AMCs). AMCs merangkumi lebih daripada dua pertiga daripada negara-negara anggota IDB dari Afrika. Dengan menggunakan data panel berimbang, kajian ini memberikan bukti-bukti empirik dari AMCs seperti Algeria, Egypt, Gambia, Morocco, Nigeria, Senegal, Tunisia dan beberapa negara lain lagi tentang peranan IDB di dalam menyuburkan pertumbuhan bagi negara-negara ini bagi tempoh 1987-2010. Selain itu, kajian ini juga meneliti perihal penyebab yang wujud di antara bantuan asing dan rasuah di AMCs. Ini dilakukan ekoran daripada perspektif tentang amalan rasuah yang meluas di Afrika. Oleh itu, model persamaan serentak (SEM) digunakan sebagai model asas manakala kaedah OLS, 3SLS dan *Seemingly Unrelated Regressions Estimate* (SURE) digunakan untuk tujuan penganggaran. Sebaliknya, pendekatan *Autoregressive Distributed Lag* (ARDL) berdasarkan kepada ujian-ujian kointegrasi dan penyebab Granger digunakan untuk menganggar hubungan di antara rasuah dan bantuan asing. Jelasnya, dapatan daripada kajian ini mendedahkan bahawa kegiatan bantuan asing IDB mempunyai kesan positif terhadap pertumbuhan ekonomi AMCs melalui pelaburan sebagai mekanisme transmisi yang utama dan ini mengesahkan hipotesis keberkesanan bantuan asing. Begitu juga, perihal penyebab di antara rasuah dan bantuan asing ditemui dalam kedua-dua jangka pendek dan panjang; dan dapatan kami mengesahkan bahawa negara-negara seperti Morocco dan Nigeria adalah mangsa kepada perangkap rasuah. Pada dasarnya, kajian ini boleh dianggap sebagai kajian empirik perintis di dalam meneliti kesan bantuan asing IDB di Afrika.

Kata kunci: Bank Pembangunan Islam, Bantuan Asing, Model Persamaan Serentak, Pertumbuhan Ekonomi, *African Muslim Countries*

ACKNOWLEDGEMENTS

All praises, adorations and glorifications are due to ALLAH, the Most Exalted; and may His boundless blessings continue to shower on our Prophet (S.A.W.). Essentially, my appreciation goes to my Supervisor, Dr Nor Azam Abdul-Razak for his patience and guide. Also, I wish to thank Prof. Madya Dr Mohd Dan Jantan and PM Dr Jauhari bin Dahalan. Similarly, I acknowledge the academic contributions of PM Zakariya Bin Man (Malaysia), Prof. Kabiru I. Dandago (Nigeria) and Dr Gustian D. (Indonesia). My heartfelt appreciation goes to our Boss, Prof. Is-haq O. Oloyede (VC-UNILORIN) and H.E. - Former Executive Governor of Kano State - Malam (Dr) Ibrahim Shekarau (Sardaunan Kano). Others include: Dr Bashir S. Galadanci, Justice S.O. Muhammad, Prof. Dr Wan Sulaiman Bin Wan Yusoff, Prof. S.A. A/Salam, Prof. Adam Ahmed, Prof. (Mrs) E. Amali, Prof. Shehu Rano, PM Dr Mohd Yussoff and Dr H. A/Salam among others. Institutional appreciation goes to the IDB Group (Saudi Arabia), AfDB (Tunisia) and the IIIT (Nigeria). Moreover, I wish to thank my parents, especially my father - I say: ***"Rabbir hamhuma kamaa rabbayaani saghiira"*** **(Q17:24).** I also thank my lovely wives and children for their Prayers, Patience and Provisions. My wives: MD Fa'idah and MD Rafi'ah as well as my children-Muhammad, Ibrahim, Maryam and Usamah. Thanks to my extended family, well-wishers and friends like: Dr Adebayo, Dr Abideen, Dr Kilishi, Br Hassan, Br A/Fattah, Dr Shukri, Dr Hussain, Dr Shakir and a host of others. Conclusively, I thank my fellow colleagues in UUM, KUIN and IIUM.

DECLARATIONS

In accordance with conventional academic research ethics, I hereby declare that some parts of this thesis have been published in the following articles:

1. Mustafa, D. & Abdul Razak, N.A. (2012). Islamic Development Bank, Foreign Aid and Economic Growth in Africa: A Simultaneous Equations Model Approach. *International Journal of Economics and Finance, 4*(6).

2. Mustafa, D. & Abdul Razak, N.A**.** (2011)**.** Islamic Development Bank (IDB), Foreign Aid and the Challenges for Sustainable Development in Africa. *International Journal of Business and Social Science, 2*(4).

3. Mustafa, D. (2009). Foreign Aid and Economic Growth in Africa: The Case of Human Capital Development**.** *Academy International Journal of Marketing Management, 1*(1).

4. Mustafa, D. & Abdul Razak, N.A. (2012). Foreign Aid and Corruption in Selected African Countries: An Econometric Approach using ARDL Model. Forthcoming Journal Publication in *Bayero International Journal of Islamic Finance* (BIJIF).

5. Mustafa, D. & Abdul Razak, N.A. (2012). Aid-Growth Nexus Debate in Africa: A Methodological Exposition. Forthcoming Journal Publication in *International Journal of Advances in Management and Economics* (IJAME).

TABLE OF CONTENTS

CHAPTER TWO: THEORETICAL FRAMEWORK AND LITERATURE REVIEW

CHAPTER THREE: ISSUES ON ECONOMIC GROWTH AND FOREIGN AID

CHAPTER FIVE: RESULTS AND DISCUSSIONS

LIST OF APPENDICES

LIST OF TABLES

LIST OF FIGURES

LIST OF ABBREVIATIONS

AfDB:	African Development Bank
AsDB:	Asian Development Bank
APF:	African Partnership Forum
AMCs:	African Muslim Countries
ARDL:	Autoregressive Distributed Lag
ASEAN:	Association of South-East Asia Nations
AU:	African Union
CIDA:	Canadian International Development Agency
CPI:	Corruption Perceptions Index
DA:	Development Assistance
DAC:	Development Assistance Committee
DFID:	Department for International Development
DRC:	Democratic Republic of Congo
ECM:	Error Correction Model
FDI:	Foreign Direct Investment
GMM:	Generalized Method of Moments
H:	Hijrah (Islamic calendar)
HCD:	Human Capital Development
HDI:	Human Development Index
HIPCs:	Highly Indebted Poor Countries
ICOR:	Incremental Capital-Output Ratio
IDB:	Islamic Development Bank

LDCs:	Less Developed Countries
LDMCs:	Least Developed Member Countries
LICs:	Low-Income Countries
LSDV:	Least Squares Dummy Variable
MDGs:	Millennium Development Goals
MFIs:	Multilateral Financial Institutions
NEPAD:	New Partnership for Africa's Development
ODA:	Official Development Assistance
OECD:	Organization for Economic Cooperation and Development
OIC:	Organization of the Islamic Conference
OLS:	Ordinary Least Squares
OPEC:	Organization of Petroleum Exporting Countries
SEM:	Simultaneous Equations Model
SPDA:	Special Program for the Development of Africa
SSA:	Sub-Saharan Africa
SURE:	Seemingly Unrelated Regressions Estimate
SWAPs:	Sector-Wide Approaches
TNCs:	Trans-National Corporations
TVSD:	Technical and Vocational Skills Development
UNDP:	United Nations Development Program
USAID:	United States Agency for International Development
2SLS:	Two-Stage Least Squares
3SLS:	Three-Stage Least Squares

CHAPTER ONE

INTRODUCTION

1.0 Introduction

This section presents the general introduction on the subject matter of our study, which is meant to serve as a general overview. Hence, issues such as background of the study, problem statement, research questions and objectives of the study are discussed. In the same vein, other important issues like significance of the study, conceptual framework and the overall organization of the entire thesis are presented and discussed to set the ball rolling for more elaborate and detail study.

1.1 Background of the Study

It has been acknowledged by numerous writers and scholars that Africa is perhaps the richest continent in the world in terms of natural, mineral and human resource endowments. Hence, Africa prides with important world reserves like 10 percent in oil, 40 percent in gold, 80 percent in chrome and as much as 90 percent in the platinum metals. In fact, it has been noted that the potentials of the continent is vast. The continent as at August 2012 has 54 countries (including the newly created South Sudan) and prides with a population of 1.031 billion people. Nonetheless, the African continent contains the largest number of backward and least developed countries, while almost half of its population lives in poverty. Among the least developed countries of 48 identified by the United Nations Development Program (UNDP) - Human Development Report of 1998, 32 are African countries. Also, 34 African countries are among the 45 lowest-ranked countries and the Human Development Index (HDI) for Sub-Saharan Africa

(SSA) in 2001 was 0.47. In the same vein, the 2007/2008 Human Development Report also revealed that 22 countries suffer from low human development and that 11 African member countries of Islamic Development Bank (IDB) are affected (Easterly & Levine, 1997; Gyimah-Brempong & Wilson, 2005; IDB, 2007; Kasekende, 2008; Dowden, 2011; Ben Amar & Hamdi, 2012).

Similarly, the HDI of 2010 by the UNDP listed 42 countries with HDI of 0.8 and above. Norway with 0.938 was foremost on the list while Barbados ranked the lowest with 0.788. Unfortunately, no African country fall within this category except in the last category of low human development with Zimbabwe at the bottom of the ladder. Thus, the bulk of African countries occupy the lowest rank on the standard of international comparisons such as income per capita, level of extreme poverty (less than $1 a day-per capita income), literacy, life expectancy, infant mortality and a host of others. The continent also suffers high level of growth deficits over the last four decades (Agubuzu, 2004; Desai, 2002; Gambari, 2004; Sowell, 2005; UNDP, 2010; Williams, 2005).

According to the African Development Bank (2004), Africa lags behind most other regions of the World on most indicators of growth and development. Consequently, it has fared quite poorly in its international trade performance over the last two decades. Its share in world export has declined to 2 percent in 2003 compared to 3 percent in 1990 and to 6 percent in 1980. By 1990, the total external debt of African countries was in excess of US$270 billion, leading to a crushing debt-service burden and further aggravating Africa's development challenges. It needs to be stressed that on current trends, growth is still inadequate

in most African countries, particularly with respect to achieving the Millennium Development Goals (MDGs).

Furthermore, the World Bank estimates revealed that about 40 percent of African's countries private capital was kept outside the continent in the 1990s and that the Group of 42 Highly Indebted Poor Countries (HIPCs) are mostly from the African continent. Also, financial outflows from the continent between 1970 and 2008 were conservatively estimated at US$854 billion. In this regard, IDB recent estimates revealed that 17 Sub-Saharan African member countries of the Bank are not on track to realize the target of MDG of halving poverty of people living below $1 a day by 2015 (Aznan, 2008; Dowden, 2011; Gambari, 2004; IDB, 2009a; IMF, 2006). All these indications and many others lend credence to the position of Easterly and Levine (1997), Collier and Gunning (1999), Easterly (2003, 2005) and Sowell (2005)), which described Africa as a continent suffering from chronic failure and economic growth tragedy. The words of Easterly and Levine (1997) put this position in a proper perspective:

> Africa's economic history since 1960 fits the classical definition of tragedy; potential unfulfilled, with disastrous consequences. In the 1960s, a leading development textbook ranked Africa's growth potential ahead of East Asia's and the World Bank's chief economist listed seven African countries that "clearly have the potential to reach or surpass" a 7 percent growth rate. Yet, these hopes went awry. On average, real per capita GDP did not grow in Africa over the 1965-1990 period, while in East Asia and the Pacific, per capita GDP growth was over five percent and Latin America grew at almost two percent per year. Much of Africa has even suffered negative per capita growth rate since 1960, and the seven promising countries identified by the World Bank's chief economist were among those with negative growth. (p. 1)

African Development Bank (2001) also corroborates this view when it submits that despite the fact that Africa showed great growth potential in the immediate post-independence period, yet large number of African countries suffered from negative per capita GDP growth for almost four decades that followed. This surely explains why Africa entered the new millennium facing enormous developmental challenges such as pervasive poverty, bad governance and endemic corruption, widespread societal conflicts, degradation of natural resources and growing urbanization. The foregoing submissions demonstrate the extent to which many things went wrong in Africa since independence. In this vein, Kasekende (2008) also submits:

> Over the last fifty years, while the world has grown more prosperous, Africa has remained poor and by some indicators even poorer. Poverty and inequality have remained stubbornly high, while livelihoods are less secure. As many as 292 million people in Africa survive on less than one US dollar a day, about one third of the children who enroll in primary schools drop out before reaching grade five and over a fifth of those between the ages of 15-24 cannot read and write. (p. 1)

Basically, Africa consists of two broad regions i.e. Sub-Saharan Africa (SSA) and the North or Tropical Africa. Unfortunately, the badly affected of the two regions in terms of growth deficits is SSA, which hosts more than 90 percent of the countries in the continent (i.e. 49 countries). The SSA constitutes more than one-third (i.e. 22 countries) of the total IDB member countries (see Appendix A and Table 3.4). Yet, the SSA is largely characterized by poor governance, low schooling, political instability, underdeveloped financial systems, distorted foreign exchange markets, high government deficits due to serious fiscal leakages and insufficient infrastructure. SSA is the lowest-income region in the world with

32 countries poorer now than in the 1980s. These variables account for about two-fifths of the growth differential between the countries of Sub-Saharan Africa and fast growing East Asian countries like Malaysia, Singapore and Thailand among others. Estimates put the number of poor in SSA at 250 million, which is around 45 percent of the region's population (Easterly & Levine, 1997; Collier & Gunning, 1999). Similarly, Kasekende (2008) submits that in the SSA region, the number of poor which was 200 million in 1981 almost doubled (i.e. 380 million) in 2005, even though global poverty fell from 1.9 billion to 1.5 billion within the same period. Also, IDB (2006a) notes that the poorest Muslim countries and communities are largely found in SSA where they suffer from unprecedented development deficits and hence, SSA is being regarded as a baffling outlier from various perspectives (Abegaz, 2005). The SSA region according to Desai (2002) "has become a byword for the failure of all development strategies" (p. 9). Similarly, Abegaz (2005) observes that the SSA is the only region where real per capita income is persistently falling or even stagnant for a large proportion of the population in the region. In the same perspective, IMF (2005a) notes that real per capita income is worse today than it was 25 years ago, notwithstanding the slight performance improvement in economic growth in the mid-90s. Again, sixteen of the twenty countries of the World with most difficult economic and financial conditions are in the Sub-Saharan Africa. The region ranks high in human poverty index and corruption index, but low in human development index. Thus, its long-run growth performance has been tagged "the economic tragedy of the twentieth century" (Desai, 2002, p. 9).

Africa is grossly lagging behind in its commitment and adequate funding of key sectors like education, health and infrastructure among others; which are the key components of human capital development. Agubuzu (2004) puts the human development challenges facing the continent in the following words:

> The human development challenges facing sub-Saharan Africa are huge. Health and education indicators show severe deficiencies. Africa has the highest morbidity and mortality rates in the world. Health and nutrition standards have deteriorated and Africa is the continent worst hit by AIDS. (p. 16)

Moreover, Adeoye (2006) states that recent studies have revealed that factor such as human resource development have been emphasized as among the major means of increasing productivity for rapid economic growth and development, especially in developing countries. Therefore, for sustained economic growth in Africa, substantial investment is required in this important area. And one of the best ways to achieve this is for the African government to improve its capital spending on physical infrastructure, with especially an increased and prudent spending on education and health, in order to accelerate human capital formation in the continent. Salisu (2007) notes that, "in addressing these problems, foreign aid has been suggested as veritable option for augmenting the meager domestic resources" (p. 4). Hence, this veritable option/support has been identified in three key areas namely: official development assistance (ODA), trade and debt relief (Gambari, 2004).

In view of the fact that 2015 draws closer, implementation of policies to meet the Millennium Development Goals (MDGs) in Africa, especially for SSA is now more urgent and important than ever. Even though the real GDP growth averaged over 5 percent during 2004-2005, it still falls short of the 7 percent needed if poverty is to be halved by 2015. This scenario of revenue bottleneck in the continent underscores the seriousness of financial resource gap, which foreign aid is expected to fill, especially as the continent battles with the great desire and desperation to realize MDGs by 2015. Hence, the urgent need to mobilize domestic and external resources to implement New Partnership for Africa's Development (NEPAD) Initiative by African leaders. NEPAD connotes a homegrown African development initiative developed and articulated by a small group of African leaders in 2001 and was formally integrated into the African Union in July 2004. It emerged from a vision of African leaders to launch the continent on a path of sustainable development at the beginning of the new Millennium. On this note, Gambari (2004) observes that the birth of NEPAD could not have been more appropriate than now. The diagram below presents the political-geography of the African continent, which consists of 54 countries including the newly created South Sudan.

Figure 1.1:
The Political-Geography of Africa

Considering the multidimensional socio-economic and political challenges confronting the continent, the attainment and achievement of sustainable development in the real sense could be a herculean tasks. However, through collaborations with various global financial institutions, organizations and agencies, especially the ones that are genuinely interested in the development of the continent like the IDB; these challenges could be surmounted. Therefore, in view of the resource bottlenecks confronting the continent, the words of Chenery and Strout (1966) captured it appropriately when they submitted as follows: "the foregoing description of underdeveloped countries as characterized by persistent resource bottlenecks may be summed up as a hypothesis of limited structural flexibility" (p. 682). Thus, for Africa to overcome the developmental challenges before her, the international community must necessarily come to her support in form of providing the necessary financial and other supports, especially foreign aid or assistance as noted by Salisu (2007).

Easterly (2005) posits that foreign aid to the continent came about because the tragedy of Africa's growth is a well known issue to the international community, as such there is the need to salvage her. Hence, the activities of international financial institutions and agencies like the World Bank, International Monetary Fund (IMF), Organization for Economic Cooperation and Development (OECD), United States Agency for International Development (USAID), British Department for International Development (DFID), Canadian International Development Agency (CIDA), Asian Development Bank (AsDB), African Development Bank (AfDB) and Islamic Development Bank (IDB) among others

are worth studying. This is for the purpose of policy guide, formulation and direction for policy makers and well-wishers of African development process like the UN, EU, AU, OIC, ASEAN and a host of others on their policy attempts to achieve sustainable growth and development in the African continent. This is also in view of the fact that the continent is expected to realize the Millennium Development Goals (MDGs) by 2015. These goals according to Anderson and Waddington (2007) and United Nations (2006) are: halving global poverty and hunger; reversing the spread of HIV or AIDS pandemic; providing primary education for every boy and girl; ending environmental degradation; reducing child and maternity deaths. Others include: a true global partnership in promoting equitable trade relations; debt relief; technology transfer and increased ODA (which means aid from the government of developed nations i.e. members of OECD). ODA does not include private contributions or private capital flows and investments like that of IDB's development assistance. And as rightly noted by Dollar and Levin (2006), ODA plays an essential role as a source of revenue to LDCs by complementing other sources of financing for development.

Therefore, in view of the enormous developmental challenges confronting the continent, there is no reason why African countries should not draw on the benefits of international cooperation for development. This implies that the continent should seek for financial assistance from wealthy nations and multilateral financial institutions like IDB. Nonetheless, the continent must be seeing as taking the lead by setting the agenda through determining the priorities of development as well as taking the lead in its implementation. It is in this vein

that Ndikumana (2006) notes, “It is clear that developing countries cannot do without development finance institutions” (p. 1). In line with this position, Loxley and Sackey (2008) opined that Africa’s development seems to be an aid-dependent one and that perhaps explain the 30 percent share of the overall donor aid commitments and allocation to the continent up till 1985. This scenario was even considered as a rapid increment in view of the continent’s development needs, oil price shocks, harvest failures, world economic recession and the African development crisis. However, aid to Africa as a share of total aid to developing countries reached a high time peak of 38 per cent from 1985-1994. Although, from 1995-2004, this share of aid fell to 31 per cent and the total net aid in real terms had decreased to $23.4 billion from 1985-1994 level of $27.3 billion. It is important to state that aid inflows into the continent are made up of both bilateral and multilateral sources with the latter ranging between 26 to 34 per cent of total net aid disbursements. Rogoff (2003) observes that more aid is still required to confront the daunting challenges bedeviling Africa. His words appropriately express it better:

> If the world’s rich countries really honor recent aid pledges to sharply increase aid for Africa, the results could be dramatic. We may see aid flows increasing three-fold, with many countries receiving transfers equivalent to 20 percent of their GDP and more every year. If sustained for 10-15 years, such flows might go a long way toward helping Africans achieve basic living standard, as set out in the UN’s Millennium Development Goals (MDGs). The MDGs widely accepted benchmarks for core human welfare, span issues ranging from health and education to the welfare of women. (p. 56)

According to IMF (2006), significant increases in aid offer major opportunities for the continent to grow but it may also pose macroeconomic challenge if not properly used. However, Burnside and Dollar (2000), Hansen and Tarp (2000), IMF (2006) and World Bank (2002b) advanced supports for sound public expenditure management (PEM) systems, public auditing bodies, good economic policies and good governance as likely variables that could maximize the benefits of aid in LDCs. There is no doubt that adhering to these suggestions would provide opportunities for more funds to be channeled to productive uses and reassuring donors that their funds shall be judiciously spent.

Basically, numerous debates and researches have been conducted on the various aspects of Africa growth tragedy meant to discuss and test the relationship between growth and socio-economic and political variables like poverty, fiscal policy, human capital, ethnic diversity, public policies, inflation, political instability, inequality, savings and investment, corruption, foreign aid and a host of others. These studies are evident in the works of Agubuzu (2004), Alvi, Mukherjee and Shukralla (2008), Barro (1996), Bauer (1972), Burnside and Dollar (2000), Chaudhuri (1978), Chenery and Strout (1966), Easterly and Levine (1997), Collier (1999) and Easterly (2003, 2005, 2006). Others include: Friedman (1958), Gambari (2004), Griffin (1970), Gyimah-Brempong (1992), Gyimah-Brempong and Asiedu (2008), Hansen and Tarp (2000, 2001), IMF (2006), Levine (1997), Papanek (1973), Roemer (1989), Salisu, (2007), USAID (2006), Vivodas (1973) and World Bank (1998, 2002a, 2002b) among others. However, the various researches considering the relationship between economic growth and

foreign aid have been regarded as inconclusive and with mixed results (Easterly, 2005; Gyimah-Brempong, 1992; Salisu, 2007). In line with this submission, Riddell (2007) posits:

> Today, examining the results of aid projects and programmes, and sifting through the evidence to try to understand the relationship between the aid provided and the wider performance of aid-recipient economies, are seen as fundamentally important in deciding whether-as its supporters argue-aid really works, or whether-as its detractors contend-it really doesn't. (p. 2)

Therefore, this research seeks to explore further the aid-growth nexus debate in line with Gyimah-Brempong (1992) recommendation that further researches are still needed because of the inconclusiveness in the debate. Also, in line with the position of Dovern and Nunnenkamp (2007) that the controversy on whether foreign aid is growth-enhancing in developing countries is far from resolved. Hence, this study is an attempt in this direction through the introduction of a new dimension or perspective into the aid-growth debate. As a matter of fact, a new concept i.e. "African Muslim Countries (AMCs)" has been introduced for investigation using the dataset of IDB. This is in view of the fact that no study has been carried out in this area. Importantly, the ODA data which are often used for estimating the aid-growth impact, especially for Africa do not capture data from private multilateral financial institutions like IDB. This is because ODA is basically aid from various governments of developed and wealthy countries, which exclude contributions from private individuals or private multilateral financial institutions.

However, it needs to be stated that the exact amount of foreign aid to Africa through ODA is yet to be ascertained because of the conflicting figures often reported in the various articles and reports. For instance, Easterly (2005) submits that the sum of US$568 billion has been spent as foreign aid since 1960-2005; while Loxley and Sackey (2008) posited that the continent has benefitted the sum of US$71.8 billion from 1975-2004. Nevertheless, the submission of Werlin (2005) that an average of US$15 billion annually goes to Africa through ODA as development aid could provide a better insight on the issue, especially if we consider the ODA statistics provided in Figure 3.2. Thus, computing for the total aid based on US$15 billion annual average for the last 40 years (i.e. from 1970-2010) would give US$600 billion. Although, the total illicit financial outflows from the continent to developed countries spanning 1970-2008 have been conservatively put at US$854 billion (Dowden, 2011). In view of the foregoing submissions and discussions, it is evidently clear that a research of this nature is necessary to take care of these gaps, so as to provide sound basis for policy guide and formulation, particularly for a continent like Africa that is suffering from growth and development deficits in the last 50 years (i.e. from 1960-2010).

Furthermore, considering the complex, heterogeneous, ethno-cultural-linguistic and religious diverse nature and characteristics of Africa, it is necessary to extend the scope of the discourse. This is very much true for the Sub-Saharan Africa, which hosts majority number of Muslim countries in the continent. Therefore, this study is significant to African economic debate, to SSA and more importantly to IDB due to the fact that most of the member countries in Africa are Muslims.

More so, in view of the staggering growth patterns of these countries and the need to sustain a stable growth pattern, so as to meet the MDGs and reduce extreme poverty in the continent as well as to achieve IDB 1440H Vision. And as rightly observed by Aznan (2008): "…many of our African member countries are behind on the achievement of the IDB 1440H Vision targets and the Millennium Development Goals". Against this background IDB (2009a) notes that the development assistance of the Bank is for the purpose of achieving the targets of MDGs and the IDB 1440H Vision. In particular, the overriding purpose of the development assistance is to alleviate poverty and achieve comprehensive human development, especially in the Least Developed member Countries (LDMCs) (see Appendix D). On this note, the submission of Pramanik (2003) is more instructive and important to be noted at this juncture: "The OIC and IDB have tremendous potential to ensure political and economic democracy within the Ummah. However, if they want to realize this potential, the OIC has to formulate policies based upon the member states' human and physical capital resources, and IDB (the OIC's financial wing) must finance social investment projects (i.e. those related to education, health and research)" (p. 80).

In this regard, the IDB cumulative development assistance to member and non-member countries spanning 1976-2010 stands at US$70.321 billion (IDB, 2010, 2011b). Based on the IDB four major mode of operations, the share of trade financing was put at 52.5 percent, project financing was 46 percent, technical assistance stood at 0.5 percent and special assistance operations was 1percent (IDB, 2011b). Additional resources amounting to US$4 billion has been estimated

to be spent as development assistance on projected growth in IDB member countries from 2008 to 2012 (IDB, 2008e, 2009a). However, it needs to be stated that the total sum of the development assistance of IDB to Africa from 1976 to 2010 as presented in Table 3.7 below stands at US$20.849 billion, which represents almost 30 percent of the cumulative development assistance of IDB. Also, the stated amount represents 3.5 percent of ODA to Africa, when calculated on the basis of US$15 billion annual average's submission by Werlin (2005) for four decades (see Table 3.4). Against this backdrop, this study therefore seeks to investigate the impacts of the development assistance of IDB on the growth and development process in AMCs. More particularly, the areas of investment and human capital development have been identified as the major transmission mechanisms through which foreign aid impacts on growth in LDCs like African countries. Hence, these two economic growth determinants are theoretically and empirically regarded as the most effective channels for measuring the effective impacts of foreign aid on growth and as such, they have been given prime importance in this study.

1.2 Problem Statement

Aid-growth nexus discourse has continued to generate a lot of debates since the 1960s, 1970s and 1980s among economists, development analysts and policy makers. According to Easterly (2003), Minoiu and Reddy (2010) and Salisu (2007), the debates on the aid-growth nexus discourse are largely inconclusive because there were limited data availability. More so, the model specifications and mechanisms by which these two economic variables interact are still

debatable. Riddell (2007) states that numerous key books and articles have been produced in the last two decades which reviewed the evidences on the relationship that exists between foreign aid and economic growth. This has been done in order to create and generate awareness about the significant role of foreign aid in the development process of LDCs. In this view, Ali and Isse (2005, 2007) posited that the impact of foreign aid on economic growth is ultimately an empirical question.

Therefore, considering the works of various scholars and writers on this topical issue, it becomes clearer that the debate on the impact of foreign aid on economic growth is inconclusive. This position has been rightly noted by Dovern and Nunnenkamp (2007) in the following words: "The controversy on whether foreign aid promotes economic growth in developing countries is far from resolved" (p. 359). It therefore implies that more studies are still required to further demonstrate empirically the true position on the aid-growth nexus. As a matter of fact, this provides a gap for further studies, which this research seeks to do. More so, ODA whose data have been used by various studies and researches on aid-growth nexus do not capture the development assistance of private multilateral financial institutions and aid agencies like IDB. This is because the foreign assistance of private institutions like IDB is not within the scope of ODA (Riddell, 2007; IDB, 2008c).

Importantly, IDB is unlike other multilateral development banks and aid agencies like IMF, World Bank, OECD and a host others, because of its three distinctive characteristics: (i.) it is a model for south-south co-operation, in the sense that a large portion of the capital is drawn from member countries that are wealthy like

Saudi Arabia, United Arab Emirate (UAE) and Kuwait among others to assist poor member and non-member countries; (ii.) nearly half of its membership is treated as least developed countries; and (iii.) it uses modes of financing that are Shari'ah compatible (IDB, 2004, 2006b). The table below provides more information on the similarities and differences between the development assistance of IDB and that of OECD, which is a leading multilateral aid agency in the world today because its membership is largely made-up of developed and industrialized nations like the UK, US, Germany, France, Japan, Australia and Canada among others (see Appendix F). More so, the ODA data and activities are primarily from OECD.

Table 1.1:
Similarities and Differences between Foreign Aid in OECD and IDB

Aid Donors	**Govt. to Govt.**	**Strong link to donor country economy**	**Concessional or favorable lending terms**	**Receives payment or debts in kind**	**Grant element of at least 25%**	**Private or corporate financing**	**Shari'ah-compatible financing**
OECD	Yes	No	Yes	No	Yes	No	No
IDB	Yes	Yes	Yes	No	Yes	Yes	Yes

Source: Adapted from Lum et al. (2009) and IDB (2004, 2009a).

In this connection, it needs to be stated clearly that among the theoretical expectations and assumptions on foreign aid, which is also known as development assistance (DA) in the IDB parlance is that it should serve as a potent fiscal tool to stimulate and enhance the economic growth of developing countries and more especially LDCs like African countries. Hence, foreign aid is considered to be necessary and beneficial to the economies of LDCs, especially in the areas of promoting growth, poverty-reduction, increasing investment, human capital development, supporting good governance and a host of others. More particularly,

it has been noted by Adeoye (2006) as well as Loxley and Sackey (2008) that among the most important factors and ingredients required to propel Africa's growth process are investment in physical and human capital. Hence, for meaningful and purposeful growth and sustainability in the continent, substantial investment are necessary in these important determinants of growth. In view of this, multilateral development and financial institutions like the Islamic Development Bank (IDB) Group has long been involved in the promotion and fostering of the economies of LDCs and developing countries in various continents like Africa, Asia and Latin America among others.

However, despite the fact that the IDB is the most leading and prominent Islamic multilateral financial institution and aid agency in the Muslim world and especially with its almost four decades of foreign aid activities; it is surprising to note that no empirical study is available on the impact of its foreign aid activities on the economies of African countries, particularly the African Muslim Countries (AMCs). This is because the AMCs constitute more than two-third of the IDB member countries from Africa. Hence, these sample countries provide an excellent avenue to showcase the role of IDB in accounting for economic growth, especially in increasing the investment drive and human capital development in African countries, which are basic determinants of growth for the continent. According to Aznan (2008), the Africa continent is of great importance to the IDB. This is because almost half of the member countries of the Bank are from Africa; and more particularly because more than half of the member countries from Africa are Muslim countries, which suffer from growth tragedy.

Furthermore, even in the list of prominent multilateral donors and agencies compiled by authors like Dollar (2006), Easterly and Williamson (2011) and Riddell (2007), the IDB referred to was not the IDB of this study but an American based-multilateral development bank known as Inter-American Development Bank (see Appendix G). It is therefore fair to argue that the IDB has not received the adequate academic and scholarly attention on this topical issue and particularly, its role as an Islamic development institution in the Muslim world. Therefore, this study provides empirical evidences on the contributions of IDB to the economic growth of Africa, especially the countries used as sample.

Also, the study examined the impact of the DA of IDB on the economies of topmost and least recipient countries. This is done in order to gauge the extent to which more aid impacts on the economies of topmost recipient countries. This is in line with the position of scholars like Gyimah-Brempong and Asiedu (2008) who believed that more aid impact positively on the economy. They hold the view that foreign aid positive impact on growth is partially a function of the amount received by recipient countries. It is thus assumed that the higher the amount of foreign aid (although not higher than the threshold of 25 percent of GDP as recommended by Hansen & Tarp, 2001) to an economy with good policies, the higher the level of economic growth and development. As such, cases of countries like Botswana, Ghana and Uganda among others have been noted as points of reference (Burnside & Dollar, 2000; Calderisi 2006; Todaro & Smith, 2009).

Related to the IDB development efforts in the African continent is the all-important issue of corruption, which in recent times has been receiving attention because of its debilitating and devastating impacts on the growth and development process of most countries in the continent. Scholars and writers like Anoruo and Braha (2005), Dike (2011), Gyimah-Brempong (2002), Werlin (2005) and Williams (2005) have argued that corruption retards economic growth directly and indirectly. Its direct effects on the economy is via lower productivity, which creates misallocation of resources and; indirectly, investment in both physical and human capital is restricted because resources meant for these purposes are diverted and siphoned. The records of the Transparency International (TI) over the years have indicted most African countries as icons of corruption and this position was clearly noted by Aliyu and Elijah (2008) with respect to the case of Nigeria.

As a matter of fact, corruption is definitely a clog in the wheel of economic growth process of the continent by limiting the pace of development, reducing the amount of public resources available for welfare and productive investments and it also impedes the effective and judicious usage of foreign aid. Thus, Dike (2011) did not mince words when he posits that the price of corruption is poverty and when there is corruption there must be poverty. Therefore, as much as IDB would like African countries to grow and develop, the presence of high level corruption is certainly a major lacuna, which must be tackled with more commitment and political will on the part of African leaders. Hence, this study examined the

impacts of corruption on the development assistance provided by the IDB and vice-versa in AMCs.

Essentially therefore, this study seeks to fill three gaps: (i.) to further explore the aid-growth nexus debate and its impacts on the economies of selected African countries, which we refer to as AMCs; (ii.) to provide empirical evidences from AMCs like Algeria, Burkina Faso, Chad, Egypt, Gambia, Morocco, Nigeria, Senegal and Tunisia among others, on the role of the IDB through its development assistance in accounting for growth in these sample countries from 1987-2010 through balanced panel data of six years average, and; (iii.) to empirically investigate whether corruption causes foreign aid or vice-versa among AMCs both in the short and long-run analysis.

1.3 Research Questions

In view of the foregoing problem statement presented in the preceding section above, the following pertinent questions are of importance to this study:

1. Does the development assistance of IDB contribute positively to the growth and development process of AMCs?
2. Of what effect is the development assistance of IDB on the investment drive of AMCs?
3. Does the development assistance of IDB contribute positively to the human capital development of AMCs?
4. Does more development assistance from IDB to some AMCs lead to higher growth and increased investment?

5. What is the nature of causality existing between corruption and foreign aid in AMCs?

1.4 Research Objectives

The study seeks to examine and analyze the impact of the foreign aid activities of IDB on the economic growth of African Muslim Countries (AMCs). In specific terms, the study seeks to achieve the following objectives:

1. to investigate whether the development assistance of IDB contribute positively to the growth of AMCs;
2. to determine the impact of IDB's development assistance on the investment drive of AMCs;
3. to assess whether the development assistance of IDB contribute positively to the human capital development of AMCs;
4. to examine whether more development assistance to some AMCs lead to higher growth and increased investment.
5. to determine the nature of causality existing between corruption and foreign aid in AMCs.

1.5 Significance of the Study

Despite the numerous studies on foreign aid in Africa, none of them at least to the best of our knowledge has used the dataset of Islamic Development Bank to estimate the impact of foreign aid on the economic growth of Africa, especially the African Muslim Countries. This is in view of the enormous financial and material contributions of the IDB in almost four decades to these poor countries. Considering the observation of Ahmed (2004) that, "A large number of the poor

live in Muslim countries" (p. 13). Also, the observation of Ayub (2008), which notes that the Islamic world as a whole is characterized by underdevelopment and backwardness when compared to the Western developed countries; these observations underscore a cause for serious concerns. Hence, a study of this nature is necessary and appropriate to empirically investigate and understand why this phenomenon has continued to persist in the Muslim countries despite the huge amount of foreign aid allocation and disbursement to the continent.

In view of the foregoing observations, this study introduced a new perspective into the economic and political discourse on African economic growth and development process by coining the term "African Muslim Countries (AMCs)" as a concept. The dataset of Islamic Development Bank's foreign aid activities were used to investigate the impact on the economic performance and growth of these sample countries. Therefore, this study is significant to African economic debate, to SSA and more importantly to AMCs due to the staggering growth pattern and the need to sustain a stable growth pattern. Doing this would enable these countries to meet the MDGs as well as ensuring the successful implementation of the NEPAD initiative, which has been internationally acclaimed as a good move on the part of African leaders to take the continent's destiny in their hands (Agubuzu, 2004). It is also significant because IDB shall benefit from its outcome in terms of enhancing policy inputs and guide as well as regional planning on AMCs and African development process in general.

More importantly, the IDB 1440H Vision, which Africa is a stakeholder and potential beneficiary could further be strengthened and consolidated, if the findings of this study are consider and given the utmost attention. Evidently, this study is perhaps the first of its kind to empirically investigate the impact of the foreign aid activities of IDB in Africa. Similarly, it is also the first study on Aid-growth nexus in Africa to utilize SEM system and three estimation techniques, more particularly SURE method in the same study. Moreover, this study is more significant because it contributes to the body of knowledge in the following areas: Empirically, this is the first attempt at studying the impact of foreign aid on economic growth of Muslim countries in Africa using the dataset of IDB on its foreign aid activities in almost four decades. The IDB is an international financial institution and multilateral development bank that has contributed and still contributing significantly to the development process in LDCs and developing countries through its development assistance. Thus, it makes the study an additional and new literature to the existing ones on this topical subject matter.

Conceptually, a new concept has been introduced into the African economic debate and that is “African Muslim Countries” (AMCs). This is serving as the basis upon which the new perspective of this research is been rooted, because it makes the study to be focused on only Muslim countries in the African continent; whereas no previous research endeavor made such an academic consideration and exploration. Theoretically, the human capital variable is been introduced into the aid-growth model to further demonstrate and ascertain its significance in the growth process of LDCs as noted by Gyimah-Brempong and Asiedu (2008). In

the same vein, this study is also another contribution to the development and emergence of Islamic model of foreign aid/development assistance with IDB's activities and operations serving as empirical evidences.

1.6 Conceptual Framework

In any research undertaking, conceptual issues and their definitions are very important to the overall research success, because it enables the research to be rooted on sound and appropriate conceptual framework that will guide it. Hence, discussions on concepts like foreign aid, human capital development and African Muslim Countries (AMCs) are hereby presented below.

1.6.1 Foreign Aid

It involves transfer of resources or wealth from the developed countries or multilateral development institutions like World Bank, IMF, OECD, AsDB, AfDB, IDB and a host of others to LDCs or developing countries for the purpose of promoting economic development. Foreign aid is also referred to as foreign assistance, development assistance, development aid or external aid by various international financial institutions and agencies like IDB, OECD, DFID, CIDA and USAID among others. In view of this, Shah, Ahmad and Zahid (2005) defined foreign aid to mean: "those additional resources, which are used to raise the performance of the recipient country above the existing level" (p. 2).

However, Easterly (2003) states that the standard definition of aid according to the Development Assistance Committee (DAC) of the OECD is grants and concessional loans net of repayment of previous aid loans (a measure that treats

forgiveness of past loans as current aid). This measure according to him may be a reasonable measure of the actual transfer to liquidity-constrained governments. Thus, the foreign aid emanating from OECD is referred to as Official Development Assistance (ODA) and it has always been the major reference point when discussing about foreign aid (Riddell, 2007; IDB, 2008e). Therefore, foreign aid in simple terms means the transfer of resources or wealth from developed nations or international financial institutions or agencies to less developed countries, which could either be through bilateral or multilateral means for the purpose of promoting economic growth and development. Shah et al. (2005) noted that foreign aid has three main concessional elements, which are: (i.) grants that do not need to be repaid either the principal or interest; (ii.) loans that carry lower rates of interest or no interest at all as it is obtainable in IDB; and (iii.) loan with longer period of repayment than normally would be allowed.

Nonetheless, the words of Burnside and Dollar (2000) captured the meaning and usefulness of foreign aid when they submitted that among the closest interpretation of foreign aid is that it acts as an income transfer, which may or may not produce growth. Thus, the outcome depends on how it is utilized by the recipients. As such, if aid is invested, it increases domestic output and if it is consumed, investment is halted or minimized. Nevertheless, Arnold (1985, p. 29) and Shah et al. (2005) identified various types of foreign aid to include: financial aid which could be either tied or untied (such as loans and grants), commodity aid, technical aid, foreign direct investment (FDI), emergency assistance, project aid, program aid and military aid. Foreign aid may also come in a variety of physical

forms such as technical assistance, programs, projects such as infrastructural development and supplies of food or food aid (Moreira, 2003; Riddell, 2007). Other forms include debt forgiveness, sector assistance and investment.

Basically, Riddell (2007) submits that foreign aid is of three dimensions i.e. official aid, development aid by NGOs and emergency aid; and the sources of aid are bilateral and multilateral as noted by Shah et al. (2005). Therefore, foreign aid consists largely of one government or financial institutions "helping" another government by augmenting its budget, increasing its power over the private sector and multiplying its leverage over its citizens. Thus, foreign aid can be referred to as a fiscal tool, which can be used to increase the revenue and expenditure base of low-income countries (LICs) and developing countries. This is expected to facilitate their economic growth through sound public expenditure management and fiscal responsibility, which in most cases are often absent in these countries.

Against this backdrop, this study was largely concerned about the development assistance being administered by IDB, since the focus of this study is about the impact of the IDB's foreign aid activities on AMCs. Therefore, its development assistance includes the following: (i.) Project financing; (ii.) Technical assistance; (iii.) Focus on the Least Developed Member Countries (LDMCs) which could take any of this form i.e. concessional financing, LDMCs Special account and Ouagadougou declaration; (iv.) Participation in the HIPC Debt Initiative; and (v.) Co-financing arrangements (IDB, 2008d, 2009c).

Essentially therefore, the Bank's priority areas include: human development, agricultural development and food security, infrastructure development, intra-trade among member countries, private sector development, Research and Development (R&D) in Islamic economics, banking and finance (IDB, 2004). Importantly therefore, foreign aid in this context refers to the development assistance of IDB to especially its 56 member countries, which are not usually capture by ODA. In this vein, IDB (2008e, 2011b) classified the development assistance (DA) of the Bank into four major categories: (i.) Project financing; (ii.) Technical assistance; (iii.) Trade financing; and (iv.) Special assistance operations. It is based on this classification that our dataset on foreign aid (which is denoted as AID in our SEM framework) from IDB were gathered, extracted and analyzed. Figure 1.2 shows the four major categorization of IDB development assistance in almost four decades (i.e. 1975-2011) of its activities and operations.

Figure 1.2:
The Four Major Categorization of DA in IDB
Source: Adapted from IDB (2008e, 2011b).

1.6.2 Human Capital Development (HCD)

Human capital (HC) represents the knowledge, skills and abilities that make it possible for people to contribute to productivity and national development (David, 2001). According to Kefela and Rena (2007), it refers to the stock of productive skills and technical knowledge acquired by people. This includes the skills, education, health and training of individuals in a country. As a matter of fact, a healthy, educated and innovative population that is skilled and knowledgeable forms a solid foundation for wealth generation, accumulation and development. Hence, human capital is regarded by scholars as an essential pre-condition for economic, political and socio-cultural transformation of any nation. However, human capital development implies the training and retraining which the workforce receive, so as to make them more competent and suitable to contribute meaningfully and purposefully to national development. Siddiqui (2009) submits that human development (HD) is an important segment in determining the level of development of a nation and the three elements usually taking into consideration are: health, knowledge and living standard. He however added that Human Development Index (HDI) is often used to measure the level of HD in any country.

Collier and Gunning (1999) submitted that Africa in the last 30 years suffered from a serious lower stock of human capital if compared with other continents, especially in technical and vocational skills development (TVSD). In view of this, Mustafa (2009) opines that human capital investment is an inevitable component of the development process, which must be given topmost priority in all phases of

national planning. The submission of the former Prime Minister of Malaysia, Dr Mahathir is very instructive to be noted:

> In our drive to move vigorously ahead, nothing is more important than the development of human resources. From the experience in the last two decades, of all the economic miracles of the countries that have been poor in terms of 'natural resources', it is blindingly clear that the most important resource of any nation must be the talents, skills, creativity and will of its people…..Our people is our ultimate resource. Without a doubt, in the 1990s and beyond, Malaysia must give the fullest emphasis possible to the development of this ultimate resource (1991, p. 16).

It is therefore, an undisputable fact that human capital is an essential and most fundamental component of economic growth and development process. This is because new development in growth analysis has come to the realization that augmenting human capital, especially through education and health contributes significantly to commodity production, which directly enhances economic growth (IDB, 2007). Kasekende (2008) notes that skilled knowledgeable workforce is a critical factor for increased productivity and economic growth. Along this line of economic understanding, Cheng and Zhang (2008) submitted that recent studies suggest that modern growth is increasingly relying on human capital as the prime engine of growth contrary to the earlier stage of development, which emphasized physical capital accumulation. Thus, economic growth due to increased productivity is enormously enhanced by the quality of human resources available, which is also determined by the quality of education, health care provision and infrastructure among others. David (2001) observes that the reason why some countries are regarded as developed and others as less developed is due to the

international disparities in levels of education, which is a fundamental element of human capital development.

In this connection, any country which seeks to catch-up with developed countries must be prepared to pay the price of development and that is heavy, irreversible and genuine commitment to education through appropriate policies and adequate funding of the sector. And as rightly observed by Kasekende (2008) that low productivity of human and social capital in the Africa continent has been identified as one of the major constraints towards achieving sustainable economic growth, whereas "human resources constitute the basis of the wealth of nations" (p. 15). Furthermore, the issue of brain drain or intellectual migration or human capital flight from the continent to other developed countries has also been identified as one of the major issues militating against the development process of the continent. This is because highly trained and skilled African professionals who should be available to contribute to the African development process are outside the continent looking for greener pasture.

In view of this observation, Nyarko (2009) posits: "A major constraint to African development is the very low base of skilled and highly educated workers and professionals" (p. 1). Thus, Rena (2008) submits that there are over 10 million African immigrants scattered in various parts of the world. It has been estimated that the highly trained of them between 25-35 years represents a cash value of US$184,000 at 1997 prices. In this regard, an African professional working in the USA contributes around US$150,000 per year to the US economy and also Africans immigrants contribute 40 times more wealth to the American than the

African economy. It is in this perspective that brain drain is often regarded as another international transfer of resources in the form of human capital. Therefore, human capital is certainly more valuable than the financial capital, especially for African countries who are already suffering from shortage.

IDB (2006a, 2008d) notes that the IDB 1440H Vision identifies that achieving healthy human development is one of the fundamental challenges confronting IDB member countries with Africa worst hit. Azarnert (2008) and Rena (2008) submitted that in virtually all countries in Africa, human capital is much more valuable than financial capital because real wealth of any nation lies in its human resource endowment and especially because it propels the growth process. Meanwhile, the UNDP report of 2010 listed 42 countries with HDI of 0.8 and above. Norway with 0.938 was topmost on the list while Barbados ranked the lowest with 0.788. Among the 42 top countries, there were only 4 Muslim countries listed in the report i.e. U.A.E (0.815), Brunei (0.805), Qatar (0.803) and Bahrain (0.801). Unfortunately, no African country could make the list. To this end, Table 1.2 provides an overview of the human development index for the 19 countries, which constitute our sample countries for this study.

Table 1.2:
Human Development Index for AMCs (2010)

S/N	COUNTRIES	HDI VALUE	RANK
1.	Algeria	0.677	84
2.	Burkina Faso	0.305	161
3.	Chad	0.295	163
4.	Comoros	0.428	140
5.	Djibouti	0.402	147
6.	Egypt	0.620	101
7.	Gambia	0.390	151
8.	Guinea	0.340	156
9.	Libya	0.755	53
10.	Mali	0.309	160
11.	Mauritania	0.433	136
12.	Morocco	0.567	114
13.	Niger	0.261	167
14.	Nigeria	0.423	142
15.	Senegal	0.411	144
16.	Sierra-Leone	0.317	158
17.	Somalia	N.A.	N.A.
18.	Sudan	0.379	154
19.	Tunisia	0.683	81

Source: Extracted from UNDP HDR (2010)
Note: N.A. means data is not available.

From Table 1.2, it is obvious that Libya's human development index is the most outstanding among the AMCs with 0.755 followed by countries like Tunisia (0.683), Algeria (0.677), Egypt (0.620) and Morocco (0.567). These five countries are the major North African countries who have received higher development

assistance from IDB (see Appendix B). However, all the SSA countries in the group have poor human development record. Therefore, if AMCs are to achieve high level of human capital development, unflinching commitment is required in the massive funding of especially education, health and infrastructure, which requires enormous supports from MFIs like IDB. There is no doubt therefore that the submission of Pramanik (2003) is certainly apt, relevant and worthy of adoption by the IDB in promoting growth and development process in member countries like AMCs, especially now that human capital is regarded as an important determinant of growth. He posits in the following words: "to attain the goal of competitive cooperation based upon maximizing social equity along with economic efficiency, the IDB will have to expand its co-financing of development projects that focus primarily on creating human capital through social investment" (p. 81). No wonder therefore that Henderson and Russell (2005) also submitted: "Nevertheless, theoretical and empirical research as well as simple intuition, suggests that human capital is an element of growth process that is too important to ignore" (p. 1202).

In this regard, the parameter for measuring human capital in this study is the infant mortality rate as against the popular and conventional preference for educational attainment (see Barro, 2001; David, 2001). The choice of infant mortality rate, which is a proxy for health, is in view of the fact that primary enrolment does not imply primary completion, especially for Africa where high rates of dropout is very prevalent as noted by World Bank (2010) and Kaiser (2008). More so, considering the current state of affairs in Africa, health issues are

more fundamental than education, especially if viewed from the rate of HIV/AIDS prevalent in Africa as observed by Agubuzu (2004) and Kaiser (2008), which seriously affects the workforce meant to propel the growth process. A study by Kalemli-Ozan (2002) finds that economic growth was promoted due to decline in infant mortality. In line with these submissions, Huang, Fulginiti and Peterson (2010) stated that the HIV/AIDS pandemic tends to have varying effects on the life expectancies of children (i.e. leading to high rate of infant mortality) and adults. In view of this, they submitted as follows:

> Nevertheless, the analysis does provide substantial evidence that falling life expectancies in Africa as a result of the HIV/AIDS pandemic, as well as widespread incidence of other diseases, is leading to reduced investments in human capital formation which in turn results in lower human capital stocks and slower growth. (p. 20)

In the same light, Boone (1996) as earlier noted that this variable responds quickly to higher consumption and improved health services and it should be considered as "flash" indicator for human capital development. Similar opinion was also expressed by Siddiqui (2009) who considered infant mortality rate as the best indicator for human capital because it is a composite of four basic needs i.e. food, education, shelter and health (sanitation and clean water facilities).Therefore, infant mortality rate is considered as a good indicator of HCD, which implies that high level of infant mortality shall certainly be a big minus for the economic growth of LDCs, especially as it is happening in Africa. Therefore, one of the most important contributions, which foreign aid could make to the economies of LDCs like Africa is to boost human capital through massive investment in social sectors like education, health and infrastructure.

1.6.3 African Muslim Countries (AMCs)

Africa is a complex and heterogeneous continent that is made up of ethno-linguistic and religious diversities. For instance, Nigeria which is often described as "the Giant of Africa" has more than 250 ethnic groups speaking over 400 languages and dialects. The ethnic groups have diverse cultural and religious backgrounds but the two most dominant religions are Islam and Christianity (Central Intelligence Agency - CIA, 2011). Other types of religions include: traditional worshippers and free thinkers (secularists). This picture is perhaps true for most African countries, especially in the SSA region. Easterly and Levine (1997) observed that 14 out of the 15 most ethnically heterogeneous societies in the world are in Africa. Again, eight countries classified as high-income-countries by the World Bank's Development Report are among the most ethnically homogeneous and no such rich countries are among the top-15 most ethnically diverse countries.

Essentially therefore, the concept of African Muslim Countries (AMCs) has been coined to refer to countries in Africa whose Muslim population is 50 percent and above (see Table 1.3), since there are other religious groups in the countries. However, the fact that an African country is a member of OIC or its head of government is a Muslim does not automatically qualifies such a country to be regarded as a Muslim country, rather the yardstick or criterion used in this research is the population parameter. Importantly, the submission of USAID (2004) corroborates this position of what connotes a Muslim country: "The Muslim world is extensive and diverse, comprising 48 countries where at least 50

percent of the population is Muslim. It extends from West Africa (Morocco and Mauritania) to East Asia (Indonesia)". The table below provides information on some selected basic indicators of AMCs.

Table 1.3:
Basic Indicators for AMCs (2010)

Country	Population (000s)	Land area (000s of km^2)	Pop. Density (pop/ km^2)	GDP (PPP, USD million)	GDP per Capita (PPP, USD)	Annual real GDP growth (average over 2002-10)	Muslim Pop. (%)
Algeria	35,423	2,382	15	234,572	6,622	3.9	99
Burkina Faso	16,287	274	59	20,986	1,289	5.5	60.5
Chad	11,506	1,284	9	17,469	1,518	8.4	53.1
Comoros	691	2	309	845	1,223	1.8	98
Djibouti	879	23	38	2,131	2,424	4.1	94
Egypt	84,474	1,001	84	501,752	5,940	5.1	90
Gambia	1,751	11	155	3,525	2,031	5.2	90
Guinea	10,324	246	42	11,672	1,131	2.5	85
Libya	6,546	1,760	4	93,233	14,244	5.2	97
Mali	13,323	1,240	11	15,243	1,144	4.9	90
Mauritania	3,366	1,026	3	8,250	2,451	4.1	100
Morocco	32,381	711	46	156,306	4,827	4.6	99
Niger	15,891	1,267	13	10,979	691	4.7	80
Nigeria	158,259	924	171	384,084	2,427	9.1	50
Senegal	12,861	197	65	22,009	1,711	3.9	94
Sierra Leone	5,836	72	81	5,128	879	8.7	60
Somalia	9,359	638	15	N/A	N/A	N/A	100
Sudan	43,192	2,506	17	92,741	2,147	6.9	70
Tunisia	10,374	164	63	100,606	9,698	4.5	98

Source: OECD (2011), CIA (2011) and IDB (2011c).
Note: N/A means data is not available

Schnitzer (1997) states that the socio-cultural and religious factors are necessary factors that cannot be overlooked in the development process of any nation. In this regard, economic policy needed to accelerate economic growth in Muslim world could be adopted without having to confront Islam as a religion; whereas Islam is indeed a religion of development and progress as evident in some Muslim countries like Malaysia, Turkey, Saudi Arabia, U.A.E., Iran and a host of others. In this connection, the position of USAID (2004) seems very apt and relevant: "Sound economic policy in general and promoting increased economic openness

and trade reform should provide the right incentives for increased investment and a level playing field for increased trade, bringing faster growth without challenging Islamic principles". More so, the submission of Marcus Noland as cited in Ayub (2008) corroborates this view when he noted that "Islam being growth promoting ideology is incontrovertible" (p. 10). Considering the fact that out of the 27 African countries that are members of IDB, 19 of them qualify as African Muslim Countries based on the population parameter of 50 percent earlier stated above. It is of importance to state that the data of 100 percent Muslim population cited in Table 1.3 for Somalia and Mauritania have been ascertained as true in the database of Central Intelligence Agency-CIA (2011). Notwithstanding, the AMCs including Somalia and Mauritania received the total sum of US$19.142 billion from IDB as development assistance from 1976-2010 (see Appendix B). This amount represents 27.2 percent of the total sum of development assistance by IDB to all member countries and non-member countries from 1976-2010.

Therefore, in order to have a comprehensive and broader study on the Africa economic discourse, there is the need for new vistas to be explored and new perspectives introduced in the ongoing economic and political debate of a richly endowed continent but caught in a "series of interlocking development traps" as posited by Collier (2006, p. 189). This is indeed a mission set to be accomplished in this research, especially with the introduction of a new concept like AMCs, which previous studies on foreign aid and economic growth in Africa have not accomplished. As a matter of fact, the concept of AMCs is a new economic and

political concept introduced by this study as a contribution to the debate on the African growth and development process.

1.7 Organization of the Thesis

This study is divided into six chapters with this section serving as chapter one. Chapter two presents discussions on the various models and theories on the subject matter as well as the review of related and relevant empirical literature. Discussions on issues of importance to the proper understanding and appreciation of foreign aid, economic growth discourse in Africa and the activities and operations of IDB in almost four decades are presented in chapter three. Also, methodological framework and more especially the research methods and procedures used for the realization of the research objectives form the contents of chapter four. In chapter five, data so collected were subjected to statistical and econometric analyses and interpretations. Conclusively, chapter six presents the summary of major findings and the theoretical contributions of this study. Similarly, the methodological and empirical contributions, policy implications, scope and limitations as well as recommendations are presented.

CHAPTER TWO

THEORETICAL FRAMEWORK AND LITERATURE REVIEW

2.0 Introduction

In this section, issues relating to the theoretical framework like the Financial Two Gap and Solow growth models are discussed. Also, issues on literature review with major focus on the empirical evidences on aid-growth nexus, corruption-aid link as well as foreign aid and economic growth in the African continent are discussed with greater focus and concerns.

2.1 Theoretical Framework

For any meaningful research work to be successfully conducted there is always the need to identify the theoretical underpinnings and its likely model. In this section therefore, issues bordering on relevant theories and their relevance to the subject matter are discussed. In this vein, Chenery and Strout (1966) opined that foreign aid "has become virtually a separate factor of production, whose productivity and allocation provide one of the central problems for a modern theory of development" (p. 679). As a matter of fact, in the development economics literature, foreign aid models are generally based on any combination of the following approaches: (i.) absorptive capacity approach; (ii.) the savings-investment gap (Gap I); and (iii.) the export-import gap (Gap II) (Ahmad, 1973). Importantly, the most prominent and often used of the models is the Financial Two Gap Model by Chenery and Strout (1966), which extensively analyzed the investment and foreign exchange requirements of LDCs. Ahmad (1973) describes

the model as: “a theory that has profoundly influenced development policies of the less developed countries” (p. 2).

Also, growth dynamics are often explained by different theories, among which is the neoclassical model of Solow (1956), which postulates that sustained growth in output per head is only possible as a result of exogenous technical change. On the other hand, the endogenous growth theorists such as Romer (1986) argues that the key determinants of output growth may be endogenous variables (like human capital, knowledge base etc.). Thus, output per head can grow over time due to endogenous forces within the economy. However, the underpinning theories for this research are the Financial Two Gap Model postulated by Chenery and Strout (1966) and Solow Growth Model (1956).

2.1.1 The Financial Two Gap Model

Easterly (2003) as well as Ali and Isse (2005) noted that the notion that economic performance and economic growth is stimulated and enhanced by foreign aid dates back to the Dual Gap Model now called the Financial Two Gap Model, which was postulated and pioneered by Chenery and Strout (1966). They posited that foreign aid promotes development by playing a dual complementary role to domestic savings and foreign exchange availability. This assists in bridging the gap between savings and investment or the export-import gap. Consequently, this postulation gave birth to the Financial Two Gap Model or Double Deficits Model (DDM) in foreign aid discourse.

Basically, the model assumed that a gap exists either between savings and investment or between export and import; and since developing countries could not overcome these gaps on their own due to their limited resources or shortage of investment and foreign exchange requirements (often known as two growth deficits). According to Easterly (2005), the model predicted a strong growth effect for foreign aid through its role in promoting and boosting domestic investment beyond what domestic savings can achieve. The rationale of the model therefore, is that foreign aid should make up the differences between either the export-import gap (M-E) or the saving-investment gap (I-S). As a matter of fact, this model has continued to be one of the most prominent and relevant models and theories being used and often quoted in aid-growth nexus discourse (Ahmad, 1973; Easterly, 2003). Evidently therefore, the study by Papanek (1973) examined the empirical relationship between foreign aid, savings and private investment and he found that foreign aid contributed positively in filling the foreign exchange and saving gaps. This is because there is a positive relationship between foreign aid as a percentage of national income and growth.

In this connection, the model states that economic growth depends on investment as a share of GDP, adjusted by a factor which shows whether investment is of poor or high quality. However, the sum of domestic savings and foreign aid shall give the investment requirement of the economy. The model is as follows:

$g = (I/Y)/\mu$ …..……2.1

$I/Y = A/Y + S/Y$ ……..…….…….2.2

Here g denotes the target GDP growth, I represents investment requirement, Y is output, S stands for domestic savings and A denotes foreign aid. The parameter μ is known as ICOR (Incremental Capital-Output Ratio), which implies how many units of additional capital are required to yield a unit of additional output. This parameter determines the quality of investment in the economy. According to Easterly (2003), ICOR ranges from 2-5 and a high ICOR signifies poor quality of investment and vice-versa.

However, Easterly (1999, 2003) criticized the model on the basis of its two basic assumptions. He argues that a linear relationship existing between investment and growth over the short and medium run is doubtful on the theoretical grounds. For instance, the Solow-style neoclassical model predicts a no permanent causal relationship between the two variables. More so, ICOR implies more than quality of investment because during a transition to a new steady state, it could be higher and lower denoting initial level of investment rate and change in the investment rate respectively. Furthermore, the second assumption that aid fills a financing gap and allows for greater investment will only hold if investment is liquidity-constrained. Also, if incentives to invest are unfavorable, aid will actually finance consumption, especially if the reason for low investment is due to poverty. Despite these criticisms, the model continued to be widely used and quoted by scholars and international financial institutions. In this light, Ahmad (1973) therefore notes that no wonder that the model has remains: "perhaps the most widely read and oft-quoted model in the foreign aid literature" (p. 29). In the same

vein, it is regarded as “a theory that has profoundly influenced the development policies of the less developed countries” (p. 1).

Perhaps, some of the reasons that could be advanced for the continuous relevance of the model are the facts that the criticisms raised by Easterly (1999, 2003) are not convincing enough to jettison its adoption. For instance, the doubtfulness expressed by Easterly on the impact of investment on growth in the short and medium terms are untenable. This is because in an economy where good governance is the ideal style of leadership, financial assistance in the form of foreign aid in a short or medium term will certainly impact positively on the economy. Also, among the theoretical expectations and assumptions about foreign aid is poverty-reduction, especially where the society is poverty hit like African countries; thus, providing foreign aid to this extent is necessary and growth-enhancing. This is the point been made by Margitay-Becht (2005) when he posits, “it is simply impossible to expect a nation to live in tents and spend aid on investment” (p. 86).

Hence, in a society like Zimbabwe where there is high level of poverty and inflation above 1,000 percent, tackling poverty will do more good to the economy. In this circumstance, spending foreign aid to reduce poverty according to Arellano, Bulir, Lane and Lipschitz (2009) may be consistent with the wishes of donors because preference for the welfare improvement of the poor is also among the objectives of foreign aid. They also argued that the historical failure of aid to spur investment for growth is connected to the poverty level of the recipient countries. It is not surprising therefore that Dollar and Kraay (2002) submitted

that there are four potential factors for improving the lots of the poor in the society and these areas should be the major concerns of aid if investment must translate to growth: (i.) primary educational attainment; (ii.) public spending on education and health; (iii.) labor productivity in agriculture relative to the rest of the economy; and (iv.) formal democratic institutions. In view of the fact that the model relates/connects with these factors, the relevance of the model cannot therefore be jettison based on the criticisms of Easterly (1999, 2003).

2.1.2 Solow Growth Model

Solow Growth Model is a standard neoclassical model of economic growth developed by Robert Solow in his classic 1956 article. The model posits that economic growth is an outcome of capital accumulation, which is essentially one of the objectives of foreign aid in LDCs. It assumes that countries that experience per capita growth have increasing capital-labor ratios, which in turn leads to high return rate of savings to compensate for the cost of capital depreciation and population growth. Therefore, the model is based on three basic sources or determinants of growth (GDP) i.e. labor (L), capital (K) and knowledge or technological progress (A) (Solow, 1956). He proposed that the study of economic growth should be based on a standard neoclassical production function (Mankiw, Romer & Weil, 1992). The assumptions underlying the model are: (i.) the rates of saving, population growth and technological progress are exogenous; (ii.) there are two inputs i.e. labor and capital, which are paid their marginal products; and (iii.) the growth rates of knowledge and labor are constant i.e. effective labor (AL) and the fraction of production saved (s) for investment is also

constant (exogenous) as well as the rate of depreciation. Therefore, using Cobb-Douglas production function at time *t*, the model can be given as:

$Y(t)=K(t)^{\alpha}(A(t)L(t))^{1-\alpha}$ $0<\alpha<1$……..……...……2.3

However, in view of the fact that the main aim of this study is to investigate the impact of foreign aid on economic growth with special attention given to the investment (physical capital) and human capital determinants of growth, we hereby adopted the Augmented Solow Growth Model proposed by Mankiw et al. (1992), which is given as:

$Y(t)=K(t)^{\alpha}H(t)^{\beta}(A(t)L(t)^{1-\alpha-\beta}$,..……..……...…….2.4

Here: *H* is the stock of human capital and all other variables are defined as before. Mankiw et al. (1992) posited thus: "an augmented Solow model that includes accumulation of human as well as physical capital provides an excellent description of the cross-country data" (p. 407). Recent study by Cheng and Zhang (2008) also revealed that the driving force behind economic development is human capital, which is stimulated by foreign aid. Hence, Mankiw et al. (1992) argued that including human capital, "can potentially alter either the theoretical modeling or the empirical analysis of economic growth" (p. 415).

Against this background, the following assumptions shall underlie our adopted Augmented Solow Model: (i.) human capital is an important factor of production and economic growth, which cannot be omitted in analyzing an acceptable impact of aid on growth; (ii.) that foreign aid does not have direct impact on growth but an indirect one through investment (physical capital) and human capital. As such, we consider these two important variables as proxy variables representing foreign

aid (i.e. DA of IDB) in the growth model, which is our base model for this study; and (iii.) therefore, the following variables i.e. investment (K), human capital (H) and initial income (Y_o) served as the main determinants of growth in our adapted Augmented Solow Model i.e.

$G= f(K,H,Y_o)$ ……..……..…..……2.5

To this end, our new Augmented Solow Model can therefore be given as:

$G(t)= K(t)^{\alpha}H(t)^{\beta}Y_o(t)^{1-\alpha-\beta}$ ……..……2.6

In view of the fact that an Augmented Solow Model allows for the incorporation of the human capital variable, which is not possible in the Financial Two Gap Model, this study therefore adopted the model i.e. equation 2.6. Hence, the diagram below presents the theoretical underpinning among the major variables of interest in this study. The theoretical framework was adapted from Bjerg, Bjornskov and Holm (2011) in line with equations 2.6 and 4.1 as shown in Figure 2.1.

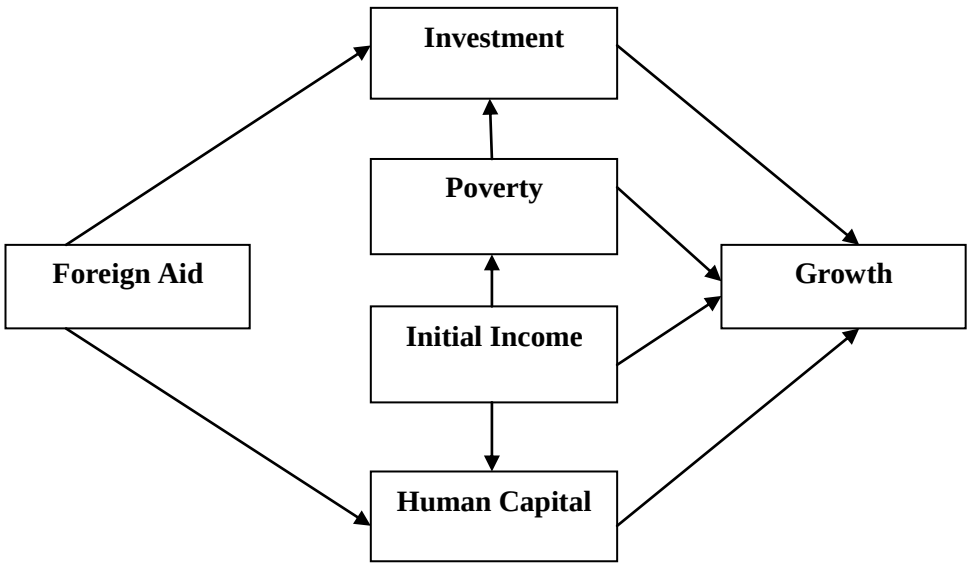

Figure 2.1:
The Theoretical Framework for this study
Source: Adapted from Bjerg, Bjornskov and Holm (2011).

2.2 Empirical Studies on the Aid-Growth Nexus

Abegaz (2005), Easterly (2003) and Salisu (2007) observed that there seems to be a lot of interests in the study of aid-growth nexus but the results from the various studies and works are largely inconclusive and characterized with mixed results, particularly since the 1960s, 1970s and 1980s. In view of this development, considerable debates and studies about the specification and the mechanisms by which these two economic variables interact have continued till present time. Thus, Ali and Isse (2005, 2007) did not mince words when they posited that the impact of foreign aid on economic growth is ultimately an empirical question; and this study seeks to provide empirical answers.

Therefore, according to Ahmad (1973), the proponents of foreign aid explicitly and implicitly are guided by three basic assumptions: (i.) Capital formation is the key to development; (ii.) LDCs are usually faced with the problem of capital shortage; and (iii.) Government planning is a *sine qua non* for creating growth perspective in LDCs. As a matter of fact, the proponents of foreign aid as contributory to economic growth started with the first generation works of Chenery and Strout (1966) to Papanek (1973), Chaudhuri (1978), Levy (1987), Mosley, John and Sara (1987) and now to the latest works of Burnside and Dollar (2000), Ali and Isse (2005, 2007), Asteriou (2008), Dovern and Nunenkamp (2007), Gyimah-Brempong and Asiedu (2008), Loxley and Sackey (2008) and a host of others. On the other hand, the alternative view that foreign aid does not positively contribute to economic growth dates back to the works of Friedman (1958) to Griffin (1970), Bauer (1972), Boone (1996), and now to more

contemporary works of Easterly (1998, 2003, 2005, 2006), Hansen and Tarp (2001) and Brautigam and Knack (2004) among others. Thus, in the succeeding subsections, the empirical studies conducted on these lines of arguments are hereby presented and reviewed.

2.2.1 Aid-Growth Nexus Debate

Importantly, the postulation that foreign aid increases economic performance and generates economic growth is based on Chenery and Strout's Dual Gap Model. Chenery and Strout (1966) opined that foreign aid promotes development thereby complementing domestic savings as well as foreign exchange availability for developing nations, thus assisting in bridging the gap between savings and investment or the export-import gap. This postulation gave birth to the Financial Two Gap Model, which is regarded as an extension of the Harrod-Domar thesis (Easterly, 2003). It assumed that a gap exists either between saving and investment or between exports and imports. It therefore concludes that developing countries could not overcome these gaps on their own due to their limited resources and thus foreign aid should fill the gaps.

An empirical study by Papanek (1973) examined the link between aid, saving, private investment and growth in LDCs. His findings revealed that foreign aid can fill the foreign exchange and saving gaps, because there is a positive relationship between foreign aid as a percentage of national income and growth. Dowling and Hiemenz (1983) performed an OLS regression analysis on a sample of 52 Asian countries spanning from 1968-1979. The variables of interest in the study were foreign aid, savings and growth in the presence of policy variables like degree of

openness, role of government in domestic resource mobilization, measure of financial repression and share of the public sector in economic activities. Their findings show that a positive and significant relationship exists among foreign aid, savings, policy and growth. This implies that all these standard variables have joint impact on growth. In fact, they reported that economic policies provided conducive environment for a productive allocation of foreign aid and other sources, particularly in high growth Asian countries. Mosley et al. (1987) also found positive correlation between foreign aid and economic growth. In the same vein, Levy (1987) reported that in low-income countries, foreign aid has been instrumental in raising the investment by 1:1 ratio. Other works confirming the positive aid-growth nexus include: Newlyn (1990), Roemer (1989), Gyimah-Brempong (1992) and especially Burnside and Dollar (2000). Other proponents include Ali and Isse (2005, 2007), Asteriou (2009), Dovern and Nunenkamp (2007), Gyimah-Brempong and Asiedu (2008), Loxley and Sackey (2008), Rajan and Subramanian (2005a), Salisu (2007) and a host of others.

Importantly, the debate on aid-growth nexus received another scholarly boost and excitement with an article by Boone (1996), which found that aid financed consumption rather than investment. This article according to Easterly (2003) was notable for introducing political determinants of aid as instruments to address problems of reverse causality. Also, the Burnside and Dollar (2000) article generated further debate and gained prominence, because it addressed the skepticism generated by Boone (1996). The study of Burnside and Dollar (2000) used a new database on foreign aid to investigate the relationships among foreign

aid, economic policies and growth for 56 countries including 21 African countries. Their SEM framework of two equations was based on panel data of six four year time periods from 1970-73 until 1990-1993 and it was estimated using OLS and 2SLS techniques. In recent times, it is among the few studies that seems to give more attention to the relevance of economic policies in aid effectiveness debate; even though a study by Dowling and Hiemenz (1983) had earlier utilized policy index in their aid-policy-growth nexus. Interestingly, Burnside and Dollar (2000) noted that when foreign aid was incorporated into their model, a positive effect on growth in a good policy environment became apparent. Hence, they established that a positive significant interaction exists between foreign aid, economic policy and growth. In this regard, they both submitted as follows: "We find that aid has a positive impact on growth in developing countries with good fiscal, monetary and trade policies but has little effects in the presence of poor policies" (Burnside & Dollar, 2000, p. 847). It must be stated that this finding is certainly a support for an earlier finding by Dowling and Hiemenz (1983), which found similar result using policy index in aid-growth regression.

Nonetheless, the results of Burnside and Dollar (2000) became popular among international aid agencies like World Bank, IMF, DFID, CIDA and a host of others. They eventually adopted this new finding and thus becoming the basis for policy formulation on foreign aid. Notwithstanding, Easterly (2003) queried its validity and rejected the results on the ground of robustness and broader applicability of the results. However, recent studies by Ali and Isse (2005, 2006), Loxley and Sackey (2008) and Salisu (2007) have further confirmed the findings

of Burnside and Dollar (2000). A study by Ali and Isse (2005) examined the effect of foreign aid on economic growth for selected over 90 countries covering Africa, Asia and Latin America from 1975-2000. They utilized OLS and 2SLS to estimate an adopted Barro (1996) and Levine and Renelt (1992) growth model and the dependent variable was the real per capita GDP growth rate. According to the study, three important findings emerged: (i.) it established that the effect of aid on growth is nonlinear, which implies that there is a threshold for aid beyond which additional aid is detrimental to growth; (ii.) the empirical results support the findings of Burnside and Dollar (2000) that a good policy environment is imperative for aid to be effective on growth; and (iii.) with the use of ethno-linguistic fractionalization as an instrument to control for growth. It shows that the relationship between AID/GDP and growth is sequential i.e. more and more aid leads to lower economic growth.

Hansen and Tarp (2001) in an empirical study of 56 countries spanning 1974-1993, examined the relationship between foreign aid and growth regressed on several policy and institutional control variables. They utilized OLS and GMM techniques for the estimation of the model and their results indicate that aid increases the growth rate without any conditionality on the policy index established by Burnside and Dollar (2000). However, their results reconfirm the empirical position on positive aid-growth hypothesis via investment. Nonetheless, they concluded that when investment and human capital are controlled for, the positive effect of aid disappeared. Roodman (2007) in another related study on aid-policy-growth nexus, examined seven papers on this link using 14 minimally

arbitrary tests for robustness for the findings in these papers. His general findings are that all the results appear fragile with respect to the findings in these seven papers including the Burnside and Dollar (2000) findings. He noted that the fragility observed by Easterly, Levine and Roodman (2004) with respect to Burnside and Dollar (2000) is the norm in the cross-country aid-growth literature. Nevertheless, he concluded that regardless of the fragility in the results, it cannot be dismissed that some aid finances investment and that domestic policies, governance, external conditions and other factors contribute to aid effectiveness. Notwithstanding, some plausible reasons for the discrepancies or inconclusiveness in the findings have been advanced by Waheed (2004). Among the reasons he identified include: absence of lag structure for most models, open-endedness of theories (for instance, over 50 variables have been found to be significantly correlated with growth), simultaneous bias, parameter homogeneity, causality versus correlation, definition of variables, quality of data and a host of others.

Furthermore, another study by Asteriou (2009), which used panel data approach and SEM for five South Asian countries revealed that there is a support for the theoretical postulation that foreign aid impacts positively on GDP growth. Similarly, Gyimah-Brempong and Asiedu (2008) also noted that external aid has a significant effect on human capital formation in LDCs. Specifically, their studies revealed that aid targeted at education and the health sectors increased primary enrollment and completion rates; while aid to the health sector decreased child mortality rates. Also, aid fungibility (i.e. diversion of aid funds for purposes not meant for) which has been considered a major threat to aid positive functionality

was not found in their study. Another study by Alvi, Mukherjee and Shukralla (2008) investigate the relationship among aid, policies and growth in developing countries consisting of African, Asian and Latin American countries from 1974-2001. Their study used a panel data of four-year average and partially linear model was estimated using a pooled semi-parametric method in line with Li and Stengos (1996). Their findings revealed that policy is an important determinant of growth and that aid is growth enhancing in a good policy environment. These findings are consistent with the finding of Burnside and Dollar (2000). Other findings from their study confirmed diminishing returns of aid like Ali and Isse (2005). They observed that nonlinearity should be properly addressed so as to capture the dynamics of aid-policy-growth relationship.

Also, a study by Quazi (2005) on Bangladesh with time series data from 1973-1999 applied a cointegration technique. His findings revealed that there is marginal effect of aid on growth but when he disaggregated aid into loans and grants, different results emerged. The findings show that grants have no effect on GDP growth but loans have appreciable impacts because foreign loans financed human capital development and public investment projects while grants promoted non-productive civil expenditures. Another study by McGillivray, Fielding, Torres and Knowles (2011) utilized Structural Equations Model to examine the impacts of aid in 48 developing countries. Their results revealed that aid has the highest impact on education has compared to health.

In general, the impacts of aid on the well-being of the poorest groups seem to be on the average while the rich groups benefit more. McGillivray et al. (2011) argued that one of the obvious implications of this finding is that the decline in the living standard of the poor is certainly at the advantage of the rich, which negates one of the theoretical objectives of aid i.e. poverty-reduction. As such, they recommended that donors need to give more focus to health because higher mortality is associated with lower wealth and education in developing countries. Also, a study by Lan (2006) examined the relationship between FDI and growth in Vietnam for the period 1996-2003 utilizes SEM framework estimated by three techniques i.e. 2SLS, 3SLS and GMM. His results show that the outcome of GMM estimation seems superior to the other two methods. The general findings indicate that FDI has positive and significant impact on growth. The relationship between FDI and exports is complementary and that human capital is an important determinant of economic growth in the country. The study also discovered that the impact of exports on economic growth is positive and significant.

On the other hand, the opponents of positive aid-growth nexus based their arguments on the presumption that foreign aid will strengthen the power of bad governments thereby undermining the emergence of the private sector as the case with most African countries with corrupt leaders. They also argued that good policies do not necessarily facilitate the impact of foreign aid on growth due to bad governance. In view of this, an empirical study by Griffin (1970) on the link existing between foreign aid and savings in 32 LDCs spanning 1962-1964 utilized OLS technique to estimate a simple model. His finding emanating from his study

revealed that a negative relationship exists between foreign aid and savings in the sample countries. In a similar study by Mosley (1980), a sample of 83 countries covering 1969-1977 using 2SLS technique was adopted to estimate a system of two equations. Meanwhile, he decomposed foreign capital inflows into foreign aid and other financial inflows and foreign aid inflows were lagged by five years. The finding revealed a negative effect of foreign aid and other inflows on growth for all the 83 countries regressed. However, foreign aid exerts significantly positive effects on growth for the 30 poorest countries in the sample. Another study which lends credence to this position is Easterly (2005, 2006). He posited that foreign aid failed to increase investment and that the Financial Two Gap Model calculation produced distorted incentive for aid. This is because the lower a country's domestic savings, the wider the gap and the more the aid a country tends to require to bridge the gap and as such, the cycle continues.

Nonetheless, Dovern and Nunenkamp (2007) noted that their findings conflicted with Easterly's (2006) verdict, which holds that aid has done so much ill and so little good. Although, it is also questionable to assume that aid can perform wonders in stimulating growth and alleviating poverty in the face of numerous problems in the developing countries like African countries. However, their findings that total aid flows have a significantly positive economic effect concur with the theoretical predictions of Rajan and Subramanian (2005b). In another study by Ekanayake and Chatrna (2010), they examined the effect of foreign aid on economic growth in 83 countries covering Africa, Asia, Latin America and Caribbean regions for the period 1980-2007. The study utilized Panel Least

Squares Estimation approach. The major finding emanating from their study revealed that foreign aid has a mixed impact on the economic growth of the sample countries. However, among the most interesting results are that foreign aid impacts positively on the economic growth of African countries in the sample, which reconfirm the finding of Gyimah-Brempong (1992). Similarly, foreign aid has positive effects on low-income and upper-middle income countries but it has negative impact on low-middle income countries. Also, another study by Akram and Mansoor (2011) observed that foreign aid is insignificantly related to the economic growth of Pakistan. They utilized a time series data for the period 1980-2008 estimated with the OLS technique. They submitted that the exclusion of FDI from the equation resulted in significant result but still a negative relationship exists between foreign aid and growth.

All in all, both the proponents and opponents of foreign aid acknowledged the fact that foreign aid has the potentials to stimulate the economic growth of LDCs; although, there are problems mitigating towards its meaningful contributions to the economies of LDCs such as corruption, bad governance, poor policy environment and aid fungibility among others. Fungibiltiy of foreign aid (a branch of corruption) implies that an increase in the income of government in the form of aid will be crowded out by rent dissipation and misguided policy blunders. This could also affect a country's ability to adhere to responsible economic policies due to donor's strategic interest (Pack & pack, 1994; Svensson, 2000, 2003; Van De Walle & Mu, 2007). Also, it is common to both camps that aid is typically

considered a possible factor that may shift aid-recipient or dependent countries to a significantly higher and sustainable growth path (Dovern & Nunenkamp, 2007).

Against this background, Hirvonen (2005) identifies the basic reasons why foreign aid has continued to have less significant impact on the recipient countries' economies: (i.) Donors have intention to benefit strategically and economically from the recipient countries e.g. the case of US continuous aid support to Israel and Egypt readily comes to mind; (ii.) Aid is designed to benefit powerful domestic interest groups (the puppets); (iii.) Aid system is based on the interests of donors and not that of the recipient; (iv.) Too little aid reaches country that desperately needs it; and (v.) All too often, aid is wasted on overpriced goods and services from donor countries, which are often refer to as phantom aid.

From the foregoing submissions, the arguments in support of foreign aid having modest positive impact on growth of less developed countries seems to be gaining more prominence and acceptance. This position is even more evident in recent works of Ali and Isse (2005, 2007), Dovern and Nunenkamp (2007), Gyimah-Brempong and Asiedu (2008), Loxley and Sackey (2008), Rajan and Subramanian (2005b) and Salisu (2007). Some of them even emphasized that foreign aid has positive impact on growth through investment and good policies environment. Also, it assists in the augmentation of the resource base of the recipient countries even at modest level. To this end, Gyimah-Brempong (1992) concludes in his study that in view of the inconclusiveness in the aid-growth link results, further studies are required to push forward the frontiers of knowledge on this topical and insightful area of economic and intellectual discourse.

No wonder therefore that Dovern and Nunenkamp (2007) also submitted that the controversy on whether foreign aid impact positively on economic growth in developing countries is far from being over. Therefore, it implies that more studies are still required to further demonstrate empirically the true position on the aid-growth nexus. More so, according to Ali and Isse (2005, 2007), aid-growth nexus discourse is an empirical issue and hence, it needs empirical response; which this study seeks to do. To this end, a research of this nature is in order, since it seeks to expand the frontiers of knowledge on this topical issue. Essentially therefore, Table 2.1 presents a summary of some leading works on the aid-growth nexus debate, which have been discussed in this study.

Table 2.1:
Some Major Works on Aid-Growth Nexus

AUTHORS	YEAR	OBJECTIVES	SAMPLE	METHOD	FINDINGS	INTERPRETATION
Ali and Isse	2005	To test the effect of aid on economic growth.	90 countries	2SLS	i. The effect of aid on growth is nonlinear. ii. The results support the Burnside and Dollar (2000)'s findings. iii. With the use of ethno-linguistic fractionalization as an instrument, it revealed sequentiality in the relationship between AID/GDP and growth.	i. The nonlinearity suggests a threshold of foreign aid beyond which more aid is detrimental to growth. This supports Hansen and Tarp (1998)'s findings which suggest 25%. ii. Aid effectiveness can only be sustained in an environment of good policy as argued by Burnside and Dollar (2000). iii. Lower economic growth is contingent on ethno/fractionalization even in the face of more aid.
Alvi, Mukherjee and Shukralla	2008	Importance of aid and policy in generating growth	48 countries (18 Afro.)	Semi pooled parametric approach (Partially linear model) in line with Li (1996)	i. Policy is mostly an important determinant of growth. ii. There is partial corroboration to the Burnside and Dollar (2000) policy	i. Aid does not work unless policy is above threshold value. Thus, reasonably good policy is needed to achieve any aid effectiveness. ii. It seems that the productive component of aid is more likely to affect growth

					view. iii. Some evidences of diminishing returns to aid, though at very high level of aid.	positively and directly than other types.
Burnside and Dollar (BD)	2000	To examine the relationships among Foreign aid, Policies and Growth	56 countries (21 Afro.)	SEM using OLS and 2SLS	i. Aid has positive impact on growth in developing countries with good fiscal, monetary and trade policies. ii. Bilateral aid is strongly positively correlated with government consumption.	i. A good policy environment is a must for Foreign aid to impact on growth. ii. Making aid systematically conditional on the quality of policies would likely increase its impact on the growth of developing countries.
Easterly	2003	Critique of BD (2000) findings on aid-policy growth link	88 countries	OLS and 2SLS	i. The interaction term of aid and policy is not statistically significant.	i. Modest objectives should be set by Aid Agencies. ii. Improving quality of aid should be a priority than the quantity through conditionality and evaluation. This is in line with Gyimah-Brempong (1992) position.
Gyimah-Brempong	1992	To examine the effects of external aid on economic growth in SSA	48 countries	SEM and LSDV	i. External aid has a positive and significant effect on SSA economic growth. ii. Aid affects growth directly and indirectly through increased savings and investment.	i. The total impact of aid on growth was not as large as other researches found. However, it was positive and significant for SSA growth especially low income countries like Mali, Burkina Fasso, Niger etc. ii. Since aid positively impact on growth, the concern should be on increasing or improving its efficiency. iii. In other to avoid biased coefficient estimates, SEM is recommended as against single equation and OLS. iv. In view of the inconclusivity in the results of aid-growth nexus, it is necessary for research efforts to

						continue.
Hansen and Tarp	2001	To examine the relationship between Foreign aid and Growth	56 countries	OLS and GMM	i. Aid increases the growth rate without any conditionality on the policy index established by BD (2000). ii. There is regularity of aid impact on growth across countries. iii. Aid impacts on growth via investment is found to be an existing fact.	i.It is premature to rely on policy indexes for aid allocation. ii.The potency that aid impacts on growth via investment underlines the theoretical explanations about aid-investment-growth processes.
Loxley and Sackey	2008	Examining the effect of aid on growth	40 countries (All Afro.)	OLS	i. Positive and statistically significant effect of aid on growth. ii. Aid increases investment. This is a confirmation of Hansen and Tarp (2001) finding. iii. Other sources of growth finance include workers' remittances, debt-service resources and domestic savings are important sources of development finance.	i. Aid matters for growth. However, there is the need for Africa to avoid donor aid fatigue syndrome by reducing dependence on aid and seeking for other sources. ii. Since aid increases investment. It implies that it is a major transmission mechanism in the aid-growth nexus. iii. Other sources of development aid should be explored for sustainable growth of the continent.
Moreira	2003	To evaluate the macroeconomic impact of aid on the economic growth of developing countries.	48 countries	GMM	i. Aid is beneficial to the economic growth of developing countries. ii. Aid has positive impact on economic growth. iii. Aid has less economic effect on growth in the short term than in the long term.	i. In order to get accurate and reliable result, non-linearity and time lags should be factored in when assessing aid-growth impact. ii. The type of aid to be allocated is also very important because it is expected that program aid will have more impact than project aid and project aid will have more impact than technical assistance.

Salisu	2007	To examine empirically the link among aid, policy and growth in SSA	20 countries	OLS and 2SLS	i. A sound macroeconomic policy is a sine qua non for aid effectiveness on growth. ii. Overall, it authenticates the results of BD (2000) that aid effectiveness is dependent on the nature of policy environment of aid recipient countries.	i. Foreign aid is expected to enhance the actualization of sustainable growth in developing countries with sound economic policies. ii. The critical need for SSA governments to pursue sound economic policies if the sluggish growth rate is to be abated. iii. The need for aid is inevitable, especially in the midst of the struggle to achieve MDGs in a majority of SSA.
Mallik	2008	To examine the effectiveness of foreign aid on economic growth in the six poorest highly aid-dependent African countries	6 countries	ARDL Model using cointegration analysis	i. A long-run relationships exists between per-capita real GDP, aid as percentage of GDP, investment as a percentage of GDP and trade openness. ii.The long-run effect of aid on growth was found to be negative except for Niger.	i It confirms the findings of Loxley and Sackey (2008) on the positive aid-investment relationship. ii. It also affirms that African countries are aid-dependent. iii. The negative aid-growth relationship could be due to the observations of Burnside and Dollar (2000) and Boone (1996) on the impacts of bad policies environment, especially in African countries where bad governance and corruption are the orders of the day.
Ndambendia and Njoupouognigni	2010	To investigate the long-run relationship between foreign aid, foreign direct investment and economic growth.	36 SSA	Mean Group, Pooled Mean Group Estimator and Dynamic Fixed Effect proposed by Pesaran et al. (1999)	i. Strong evidence of positive impact of foreign aid and foreign direct investment on economic growth. ii. The effect of foreign aid on growth is low. iii. Human capital remains the key factor that foster economic growth in SSA.	i. It also confirms the aid effectiveness hypothesis like previous studies have done. ii. It affirms the significance of human capital in fostering growth in SSA. iii. It further corroborates previous studies on the positive aid-human capital nexus in SSA.
Akpokodje and Omojimite	2008	To investigate the effect of foreign aid on agricultural	Nigeria	SEM and 2SLS	i. There is evidence of significant positive effect	i. The need for foreign aid to be channeled to productive sectors like agriculture because of

		growth.			of aid on agricultural growth. ii. No support for the view that foreign aid flows to countries with low savings. iii. Also, there is no evidence to support the opinion that aid flows generate increased imports by recipient countries.	its direct effects on growth and poverty-reduction. ii. The finding on aid not flowing to low saving countries negate the Two-Gap model.
Lan	2006	To examine the linkages between FDI and economic growth	Vietnam	SEM, 2SLS, 3SLS and GMM	i.FDI impacts positively and significantly on growth. ii. the relationship between FDI and exports is complementary. iii. Human capital is an important determinant of growth. iv. Exports exert positive and significant impacts on growth.	i. It confirms the finding of Li and Liu (2005) on the positive effects of FDI on growth. ii. It also lends credence to the theoretical and empirical postulations that human capital is an important determinant in the growth process of any nation.

2.2.2 Foreign Aid and African Growth Discourse

One of the most outstanding phenomena of post-second world war period is foreign aid, because it was meant to assist in the reconstruction of the war devastated and battered European economies like Germany. Later, the growth of concern on the part of developed countries with respect to the widening gap of living standards between the rich and poor countries, especially in Africa and Latin America countries. More particularly for the Africa continent, "it is clear that Africa has suffered a chronic failure of economic growth" (Collier & Gunning, 1999, p. 4). Again, the assumption on the parts of developed countries to promote economic development in these poor countries became the major

reasons for the administration of foreign aid to LDCs and other developing countries (Moreira, 2003; Raji, 2001). Hence, Africa started to witness aid inflows since the 1960s. According to Calderisi (2006), the liberal and socialist critics saw aid as a form of "imperialism", which is meant to spread and preserve capitalist interest in poor countries, especially in the former colonies (this they refer to as "Neo-colonialism").

Therefore, one of the questions which scholars and development analysts have started to ask is: what is the impact of foreign aid on the economic growth of Africa? According to Easterly and Levine (1997), Africa's growth is indeed a tragedy in view of the numerous problems that have continued to plague the continent. These problems include political instability, underdeveloped financial systems, high government deficits, insufficient infrastructure, corruption, conflicts and wars among others. Unfortunately, all these problems have continued to make nonsense of foreign aid impact on the continent. Ayittey (2005) buttresses this position in his submission: "The general consensus among African development analysts is that foreign aid has not been effective. For example, between 1980 and 1988, sub-Saharan Africa received $83 billion in aid. Yet, all that failed to spur economic growth" (p. 1).

However, Gyimah-Brempong (1992) is of the view that foreign aid has positive and significant effect on the economic growth of SSA. His study on SSA used disaggregated cross-national time-series aid data and Least Squares Dummy Variables (LSDV) to estimate a Simultaneous Equations Model (SEM). He argued that aid affects growth directly and indirectly by augmenting the country's

resources and that the most important and interesting issue is how to increase the efficiency of aid. Thus, if the effectiveness of aid in LDCs is to be maximized, the type of aid that has positive effects on growth needs to be promoted. The major finding of this study is that foreign aid impacts on growth via the investment channel. In the same vein, Irandoust and Ericson (2005) established in their study of some African countries from 1965-2000 using asymptotic theory of likelihood-based panel of cointegration that foreign aid and foreign direct investment positively enhanced economic growth for all the countries in the sample. They concluded that foreign aid is not only additional domestic revenue to the recipient countries but also a supplement for domestic saving. This position is equally supported in a related finding by Kasuga (2007) who posits that domestic saving significantly affects investment and by extension growth is enhanced.

Another study on African countries investigating aid-growth relationship for the period of 1960-2002 by Addison, Mavrotas and McGillivray (2005) found that there is positive relationship existing between both economic variables and in fact, aid also impacts positively on poverty. This finding is certainly a good omen for the continent since poverty-reduction is one the theoretical objectives of foreign aid in LDCs like Africa. In another related study by Gomanee, Girma and Morrisey (2005) on aid-growth nexus in 25 SSA countries over a period of 28 years i.e. 1970-1997 revealed a positive relationship. They argued that the poor record of growth in the African continent is not due to aid ineffectiveness but other factors like bad policy environment, corruption and bad governance among others. Again, a study by Abiola (2003) on resource gaps and economic growth in

Nigeria from 1970-1999 adopted SEM, which was estimated based on 2SLS method. The results arrived at validated the original Chenery and Strout's (1966) hypothesis on the fact that countries at their pre-take-off stage of development needs to bridge the Investment-Savings gap predominance as the case with most African countries Nigeria inclusive. The finding also indicates that the Two-gaps were not of the same magnitude as reported in previous studies.

In another related study by Akpokodje and Omojimite (2008) on the effects of aid flows on agricultural growth in Nigeria from 1970-2007 utilized SEM estimated with 2SLS method. Their findings show that foreign aid has positive and significant effects on agricultural growth in the country. However, their results do not lend credence to the view that aid flows more to countries with low savings; and also, aid flows did not generate increased imports for recipient countries. There is no doubt that their finding on positive impacts of aid on agriculture implies that aid contributes to the development of the sector, which is the largest employment sector in the country and even in the whole of Africa. By extension, aid would contribute to poverty-reduction because the agricultural sector is a pro-poor sector with direct impacts on the rural people. This would indirectly contribute to growth due to increased productivity to be generated from the sector.

A related study by Helga (2007) which also adopted SEM estimated with 3SLS technique to determine the correlation between foreign aid and FDI inflow in three heavily indebted African countries (i.e. Ghana, Malawi and Mozambique) for the period 1970-2004. His findings revealed that in the case of Ghana with higher GDP, aid and FDI are found to be substitute rather than complementary.

However, when the other two countries were included and regressed for, the result indicates that aid and FDI are complementary. It could therefore be inferred that when HIPC countries experience a higher income per capita as the case with Ghana, it means that complementary effects tend to diminish at the cost of supplementary effects.

On the other hand, Easterly (2005) argues that Africa has become the most aid-prone continent in the world, because of her numerous problems which have continued to promote growth tragedy and backwardness. This position concurs with an earlier submission made by Goldsmith (2001) that Africa is "aid dependent" (p. 123) because very few countries in the continent can provide basic public services without the intervention of external funding. Even with the huge amount spent on Africa as aid, the situation has not improved for the better. Hence, the inability of aid to spur rapid growth has been a source of concern and dissatisfaction to donors; although partial successes have been achieved in the expansion of health, education, water and sanitation. Easterly (2005) posits that for aid to be more effective, donors must be held accountable, more modest goals should be pursued because it could also curtail the intrusion of the West in Africa and that foreign aid should be meant to solve problems that have direct impact on the desperate needs of the poor.

Nevertheless, Calderisi (2006) observes that aid works best where recipient governments are already on the right track, establishing priorities, implementing policies and developing key institutions based on their discretions. This view goes further to corroborate the findings of Burnside and Dollar (2000). The cases of

countries like Ghana during Jerry Rawlings in the 1980s, Uganda under Yoweri Museveni in 1986, Ethiopia under Meles Zenawi and Eritrea are some of the countries that put in place growth-promoting policies and institutions. Calderisi (2006) therefore notes that for aid to have positive and significant impact in Africa, the suggestions of Easterly (2005) are in order and should be adopted.

Again, the findings of Salisu (2007) who revisited the Burnside and Dollar (2000) study using Sub-Saharan African countries as sample is very instructive and informative to be highlighted at this juncture. The data used for estimation covered 20 countries, which spanned from 1970-2001. The OLS and TSLS methods were employed. His findings further validate the empirical evidence of Burnside and Dollar (2000, 2004), which hold that economic policy is an important requirement for the effectiveness of aid. In view of this, he submits: "our findings do not support the argument raised by Easterly (2003) that if the data set is expanded, the significant effect of aid-policy interaction disappears" (p. 22). The implication of Salisu's findings is that with good economic policies, especially in the African continent, the serious problems of inefficiency in aid administration and utilization could be arrested. Also, the fungibility of aid which seems to become a recurrent phenomenon in aid administration could be mitigated or eliminated completely.

Furthermore, Loxley and Sackey (2008) also examined the effectiveness of aid on economic growth in the African continent. Their findings revealed a positive and statistically significant relationship with the use of fixed effects growth model to estimate for 40 countries. They posited that it seems Africa's development is an

aid-dependent one, which corroborates the position of Lancaster (1999) and Goldsmith (2001). They observed that aid increases investment, which is a major transmission mechanism in the aid-growth nexus and that grant aid is more effective than other forms of aid. However, they noted that in order to avoid apparent donor aid-fatigue syndrome, strategy should be put in place to reduce future dependence on aid. In the same vein, Mallik (2008) uses a cointegration analysis to examine the effectiveness of foreign aid on the economic growth of six poorest highly aid-dependent African countries i.e. Central African Republic, Malawi, Mali, Niger, Sierra-Leone and Togo. His findings discovered that a long-run relationship exists between per-capita real GDP, aid as percentage of GDP, investment as a percentage of GDP and openness.

In this connection, the study established that the long-run effect of aid on growth was negative for all the countries except for Niger. Malik (2008) posits that among the plausible explanation for the negative effect of aid on growth could be due to bad policy environment as pointed out by Burnside and Dollar (2000) and Gomanee et al. (2005). This explanation could be accepted as true in view of the prevalence of bad governance culture in most African countries. More so, the high level corruption in the continent is no longer new because various reports on global corruption especially that of TI has confirmed that most African countries are classified as the most corrupt nations in the world.

Also, Armah and Nelson (2008) in an empirical study on aid-growth link in 21 SSA countries spanning 1995-2003 utilized a 4-equation SEM system with a panel data approach of five years average. Their central argument is that foreign aid can potentially augment the inadequate domestic capital in LDCs like SSA countries in order to spur growth. At the same time, it can also upset the positive incentive and desire to build wealth in these countries thereby stalling growth. Notwithstanding, their findings revealed that foreign aid promotes growth in the face of good governance but their findings do not find any support for the good policy conditionality of Burnside and Dollar (2000). However, their findings lend credence to the claim of Islam (2005) that political stability is a necessary condition for aid effectiveness. Hence, they concluded that an increase in aid to SSA is a way of achieving MDGs; although, it is an insufficient medicine to solve the economic problems bedeviling the region.

A related study by Ndambendia and Njoupougnigni (2010) examined the long-run relationship between foreign aid, foreign direct investment and economic growth in 36 Sub-Saharan African countries with the use of Mean Group (MG), Pooled Mean Group Estimator (PMG) and Dynamic Fixed Effect (DFE) proposed by Pesaran et al. (1999). Their findings revealed that strong evidence exists that there is positive impact of foreign aid and foreign direct investment on economic growth. However, the effect of foreign aid on growth for most SSA seems to be low. For example an increase of 1 percent of aid induces only 0.05 percent point of economic growth for PMG and 0.13 percent point for DFE. They concluded that human capital remains the key factor that can foster economic growth in SSA

and as such improvement in the educational system should be considered as an effective way to enhance the quality of human capital. This result is consistent with earlier result by Gyimah-Brempong and Asiedu (2008) as well as Loxley and Sackey (2008).

Furthermore, another study by Eregha, Sede and Ibidapo (2012) on aid effectiveness in Africa focusing on 10 selected Economic Community of West African States (ECOWAS) countries for the period of 1970-2008 employed Pooled Panel Estimation Technique. Their findings revealed a negative and significant relationship between aid and growth in the region, which is at variance with the dominant view of aid effectiveness hypothesis in Africa. Although, their study found a positive and significant relationship between investment and growth, which concurs with similar finding by Gyimah-Brempong (1992) and Loxley and Sackey (2008) but it found negative impacts of openness on growth. They noted that plausible explanations for aid ineffectiveness in the region could be due to poor policies, corruption, aid fungibility, uncertainty and weak institutions in the ECOWAS region. In fact, Lancaster (1999) had earlier confirmed that one of the reasons for aid ineffectiveness in Africa is due to aid fungibility, which according to Abuzeid (2009) is a means of increasing the scope of corruption and rent-seeking syndrome. Lancaster (1999) particularly noted that significant amounts meant for the continent developmental activities were shipped to Swiss Banks and hence, he posited, "aid is a double-edged sword" (p. 497).

Another study on Sierra Leone by Kargbo (2012) examined the impact of foreign aid on the economic growth of the country for the period 1970-2007. He adopted ARDL model and Johansen maximum likelihood approach to cointegration for estimation. Generally, his finding confirmed that aid effectiveness hypothesis exists in the country. However, the impacts of aid during war in the country was found to be either weak or non-existent while aid pre-war was found to be marginally more effective than aid post-war period. He noted that the findings emanating from his study has lent supports only for the supplemental theories that aid is vital in the promotion of economic growth in LDCs like Sierra Leone.

In this regard, it is discernable from the foregoing submissions of various studies that aid seems to have positive impact on Africa's growth with particular reference to countries like Botswana, Uganda and Mozambique among others. This implies that the aid effectiveness hypothesis is to some extent valid for Africa in view of the foregoing findings from the various studies. Although, it is also evident that the results achieved are far less to expectations, which is due to myriad of problems confronting the continent, especially aid fungibility, bad governance and high level corruption among others. These problems have continued to make nonsense of aid administration in the continent. In view of this scenario, African Development Bank (2001) seems to sum-up the aid-growth nexus and its associated challenges and issues in Africa in the following words:

> This financial intermediation role is predicated on the assumption that finance is a major constraint to Africa's development and that sustained development could be achieved once this constraint is removed. The experience of most African countries, however, shows that development finance may be a necessary but not a sufficient condition for development. After nearly four decades of channeling development finance into African countries, they are poorer in per capita income terms today than they were at independence. After showing great growth potential in the immediate post-independence period, much of Africa suffered from negative per capita GDP growth for most of the four decades that followed. Indeed, Africa enters the new millennium facing enormous development challenges: pervasive poverty, issues of governance, widespread societal conflicts, degradation of natural resources and growing urbanization. (p. 150)

It must however be noted that in view of the developmental challenges confronting the continent and despite the state and nature of the policy environments in most African countries, continuous aid supports would definitely assist in putting the continent on the proper growth path in the long-run, especially in view of the positive findings stated above. The submission of Salisu (2007) lends supports to this position: "Realistically, in the midst of the current efforts to achieve Millennium Development Goals (MDGs) in a majority of Sub-Saharan African countries, the need for foreign assistance is inevitable" (p. 24). In the same vein, Gyimah-Brempong and Asiedu (2008) submitted that donors should target their aid to the achievement of specific MDG goals, if poor countries are to achieve MDGs, especially in Africa. They specifically stressed on the significance of education and health as areas where aid could be very effective in achieving the MDGs. Therefore, for foreign aid to make meaningful impact in the continent, a big push is required in the areas of investment, human capital development,

infrastructural development and most importantly, poverty reduction or alleviation and good governance, which have been considered as the major socio-economic and political challenges confronting the African continent.

2.2.3 Corruption, Foreign Aid and Economic Growth in Africa

The phenomenon of corruption has become a serious threat to the growth process in most African countries, thereby increasing and confirming the economic growth tragedy identified by various scholars and writers like Easterly and Levine (1997), Werlin (2005), Aliyu and Elijah (2008) and Anuruo and Braha (2008) among others. Fundamentally, Gyimah-Brempong (2002) notes that since most African countries are large recipients of foreign aid and they suffer from weak and fragile institutions, there is every tendency that aid is going to be siphoned due to the high levels of corruption. Therefore, the consequential negative impacts of corruption in retarding the gains of foreign aid like growth, investment, poverty-reduction and good governance has further brought the issue to limelight in Africa economic discourse. Unfortunately, according to Anoruo and Braha (2005), handful studies are available on the relationship existing between corruption and economic growth in Africa. In fact, virtually no empirical studies could be assessed on the relationship between foreign aid and corruption in the continent. Nonetheless, studies like that of Anoruo and Braha (2005), Gyimah-Brempong (2002), Tanzi and Davoodi (1997) as well as Aliyu and Elijah (2008) are central relevant materials in this study. Other related empirical studies include: Ali and Isse (2003), Charron (2011) and Mo (2001).

Essentially, the study by Gyimah-Brempong (2002) uses panel data from African countries and a dynamic panel estimator to investigate the impacts of corruption on economic growth and income inequality. His finding revealed that corruption decreases economic growth directly and indirectly via investment in physical capital. According to him, the combined effects of corruption on growth and income suggest that the poor bear the brunt and pains of corruption in the continent. Thus, his study recommends that increasing the well-being of the majority of African citizens could be improved by curbing corruption. Similar study by Anoruo and Braha (2005) utilized panel unit root and Phillips-Hansen fully modified OLS procedures to investigate the effects of corruption on economic growth in 18 African countries. They noted that their results are consistent with Gyimah-Brempong (2002), which revealed that corruption retards economic growth directly by lowering productivity and indirectly by restricting investment in both physical and human capital. Thus, their study established that corruption negatively granger-causes economic growth and as such all hands must be on deck to fight it to a stand still in the continent.

In the same direction, a study on the impact of corruption on economic growth in Nigeria from 1986-2007 by Aliyu and Elijah (2008) utilized cointegration and error correction mechanism (ECM) techniques. Their findings discovered that corruption exerts significant and direct impacts on economic growth. Also, it indirectly affects growth through government capital expenditure (GCE), human capital development and total employment. In fact, their study discovered that about 20 percent of the increase in GCE ends up in private pockets of government

officials and contractors. This group of elites who embezzled resources meant for development is what Meidan (2006) described as elite gangsters/kleptocratic elites, which is almost becoming a general characteristics of African countries.

Mo (2001) has earlier expressed similar opinion in his study on the economic consequences of corruption. He stated that a 1 percentage increase in the corruption level reduces the growth rate by about 0.72 percent. In addition, his study also confirmed that corruption reduces the level of human capital and the share of private investment. Importantly therefore, the various studies on corruption established the fact that it retards economic growth directly and indirectly. And the main channels of its impacts are largely investment in physical and human capital, which are equally major determinants and ingredients of growth, especially for African countries.

Another study on corruption, growth and public investment by Haque and Kneller (2007) involving 58 countries covering Africa, Latin America, Asia, Europe and Oceania for the period 1970-2003 based on panel data of five years average utilized SEM estimated by 3SLS. The findings emanating from the study revealed that corruption increases public investment but reduces the effects of investment on growth. Also, corruption indirectly reduces private investment, which has negative effects on the economic growth. The study therefore notes that policies that would curtail corruption must be put in place for public investment to have positive impacts on growth. In fact, Harrigan and Wang (2011) noted that among the factors responsible for the often disappointing impact of foreign aid in the literature is corruption. Hence, we argued that high level corruption reduces the

gains of foreign aid, which leads to lower economic growth. Also, lower economic growth could be responsible for higher corruption and vice-versa, especially in Africa where the existence of weak and fragile institutions are very predominant.

In the same regard, an empirical study by Charron (2011) on the impact of foreign aid on corruption uses panel data from 1986-2006. The findings from his study revealed bidirectional causality between both variables. He argued that the result is consistent with previous findings among scholars. Again, an interesting discovery was that bilateral donors tie their own self-interest to the aid they provided to recipient countries and that multilateral aid are more effective in fighting corruption. This finding concurs with our theoretical expectation about the motive of bilateral aid, especially among the developed countries like the US UK, Germany, France, Italy and a host of others. It is in view of this motive that corruption in LDCs like African countries leads to lower overall growth because rent-seeking is associated with it and resources are thereby diverted from productive activities. No wonder, Africa seems to be deep caught in "the Corruption trap" as posited by Collier (2006, p. 192), because survey evidence suggests that corruption is a major problem confronting the continent. He added that the continent is presently suffering from the highest rate of capital flight in the world i.e. a higher proportion of private capital is outside Africa, which has now become a prominent feature of the continent.

More so, Williams (2003) identifies corruption as a major reason why aid has not been effective in promoting Africa's growth. So far, corrupt African leaders have stolen over $140 billion in four decades since independence; and the case of former President Mobutu of Zaire (now DRC) readily comes to mind as rightly observed by Lancaster (1999). He argued that foreign aid as a way out of poverty in Africa is simply a fool's errand, especially with what is happening in Zimbabwe. The situation is what Collier (2006) refers to as corruption trap while he posits that Africa is caught in a "series of interlocking development traps" (p. 189). He noted that for aid to make meaningful impact on Africa's growth, it should be conditioned on processes rather than policies. It is however necessary to state that both policies and processes are of paramount significant, especially that good policies in an enabling economic environment tend to facilitate and enhance the development process as noted by Burnside and Dollar (2000).

In view of the foregoing discussions about corruption and its devastating consequences on the economies of African countries, which have been emphasized by Gyimah-Brempong (2002) and Anoruo and Braha (2005) in their studies on corruption in Africa, we therefore considered corruption as an important determinant in the growth process of Africa. However, due to paucity of data on corruption perceptions index (CPI) for most AMCs, it could not be included in the growth model. Nevertheless, a corruption-aid model was formulated for the purpose of empirically investigating the relationship between both corruption and foreign aid in some selected countries among the AMCs (i.e. Morocco, Egypt, Tunisia, Senegal and Nigeria) and the possible policy

implications. These selected countries are the only countries with available data on corruption, which cover a reasonable period (i.e. 10 years above), which could be used for an academic analysis of this nature. Hence, some inferences could be made from the findings of these countries, in order to understand the nature and pattern of corruption in the AMCs. By extension, it could also assist the IDB in particular and other development partners of Africa in their policies conceptualization and formulation on the growth and development process of the continent and other miscellaneous issues.

CHAPTER THREE

ISSUES ON ECONOMIC GROWTH AND FOREIGN AID

3.0 Introduction

Scholars like Easterly and Levine (1997), Collier and Gunning (1999), Loxley and Sackey (2008) among others observed that numerous issues and events are of importance in Africa's growth and development process, especially the role of financial intermediation like foreign aid is indeed of great significance. And as rightly noted by Lancaster (1999): "The real problem of African development has been in the failure of the region to grow" (p. 490). Therefore, issues like investment, poverty, corruption, infrastructure and good governance among others, have continued to shape African economy in no small measure. In a similar vein, considering the overwhelming consequences of corruption on the continent growth and development process, empirical evidences were presented under the literature review and the theoretical and practical implications are hereby discussed in this section, especially as it relates to AMCs.

3.1 Economic Growth in Africa: Issues and Challenges

The dawn of the 1960s remains the most historic period for a large number of countries in the African continent. This is because these countries secured independence from their colonial masters; and as such, the period was greeted with joy and fun fare. This is in view of the general feelings that after many years of colonial imperialism, exploitation and appropriation of the vast resources, the continent was set to be strong, united, egalitarian and prosperous. Unfortunately, it was not too long when these hope and expectations were dashed and thrown

overboard due to myriad of problems that later plagued the continent. Prominent among these problems include: bad governance, mismanagement and corruption, political instability, conflicts and wars, underdeveloped financial systems, high government deficits which resulted in debt crisis, insufficient and poor infrastructure, economic stagnation and pervasive poverty (Agubuzu, 2004; Collier & Gunning, 1999; Easterly & Levine, 1997). Against this background, selected socio- economic issues and challenges confronting the continent, which includes investment, poverty, corruption, infrastructure, human capital and good governance are examined and discussed.

3.1.1 Investment

According to IMF (2000), several underlying factors could be responsible for the rate of output change in an economy, especially for LDCs like Africa. Key among these factors includes: the rate of investment, increase in the size of the workforce and changes in economic policies. In fact, David (2001) observes that one of the indicators of international convergence is the investment ratios of the country, especially for LDCs like Africa. Osinubi and Amaghionyeodiwe (2010) stated that in most economies, particularly the LDCs, domestic private investment has proven to be inadequate to boost the economy for the purpose of meeting the required growth rate. This observation was earlier made by Lancaster (1999) that low rates of savings and investment in most African countries provide a better clue to the fundamental problems confronting the continent. As such, foreign private investment has always been the savior, more particularly foreign direct investment. Yasin (2005) submits that Foreign Direct Investment (FDI) is

believed to be of positive impact on the economies of LDCs and developing countries because of its being a major source of external capital, new technology and advanced managerial skills.

Unfortunately for Africa, investment remains subdued thus limiting efforts to diversify economic structures and boost growth; even though the FDI in Africa is yet to reach its full potential and that the continent is lagging behind other continents like Asia. Dupasquier and Osakwe (2006) noted in their study on FDI and economic growth in Africa that some of the factors responsible for the poor record of FDI in particularly SSA include: political and macroeconomic instability, low growth and weak infrastructure. Other factors identified are: poor governance, inhospitable regulatory environments and ill-conceived investment promotion strategies. Collier and Gunning (1999) earlier observed that estimates suggest that shortfall with regards to investment in Africa is due to low private investment and they concluded: "thus, growth may be unsustainable unless there is a substantial increase in private investment" (p. 19).

Also, IDB (2007) states that Africa with about 15 percent of world population prides with only about 1.6 percent of world trade and one percent of global investment. Nevertheless, United Nations (2007) submits that the FDI inflows into Africa in 2006 was twice that of 2004 at $36 billion, which was achieved as a result of increased interest in natural resources, improved prospects for corporate profits and a more favorable business climate. It was observed that FDI rose in 33 African countries and in all sub-regions except Southern Africa. Egypt was the major beneficiary with more than $10 billion while South Africa was the major

loser due to the sale of a foreign equity in a domestic gold-mining company to a local firm.

In line with this, IDB (2009b) observes: "It is therefore not surprising that FDI has largely been viewed as a catalyst for development and of benefit both to the investor and recipient country" (p. 16). This is because from the investor's viewpoint, it allows for greater efficiency, access to the market and increased competition is enhanced. Also, from the recipient country's perspective, FDI is regarded as an important source of capital, driver of economic development, transfer of technology, employment and growth enhancement. Meanwhile, the value of cross-border Merger and Acquisitions (M&A) sales reached a record high of $18 billion and 50 percent represented purchases by TNCs from developing Asia with concentration in extractive industries. Despite this positive development on the part of Africa, her share of FDI inflows is still low if compared to 3.1 percent of 2005 as against 2.7 percent of 2006. Importantly, Barro and Sala-i-Martin (2004) stated that empirical studies support the positive and significant relationship exists between investment and growth as evidenced in the studies of Gyimah-Brempong (1992) and Hansen and Tarp (2001), although the investment propensities cannot be the whole story.

Therefore, what Africa needs now more than ever as argued by Former Prime Minister Tony Blair in his Commission's for Africa 2005 is a big push in the continent (Easterly, 2005) in terms of massive investment (through scaling up aid), especially that the continent is presently suffering from huge and untapped investment potentials. According to Kasekende (2008), in order to improve

Africa's growth prospects and even accelerate the rate of real GDP growth, an increase in the levels and productivity of investment is required. Indeed, this is one of the areas foreign aid is expected to impact positively on the economies of African countries, especially as Ahmad (1973) posits: "the main purpose of foreign aid is to supplement domestic savings, apart from being a source of foreign exchange and a vehicle for transfer of technical know-how" (p. 52).

3.1.2 Poverty

Poverty in the Africa continent has been regarded as one of the most devastating phenomena like corruption that has overwhelmed the continent despite its vast mineral and natural resource endowments. Estimates revealed that there are 250 million poor people in Sub-Saharan Africa (i.e. 45 percent of the region's population) and yet, poverty continues to spread like a wild fire because of virtual stagnation of per capita income growth. It has been observed that since the 1990s, the proportion of the population living below $1 a day has not changed. For instance, from 1995-2003, more than 50 percent of the population in Nigeria, Niger and Uganda lived on below $1 a day (Agubuzu, 2004; IDB, 2006a). In the same vein, Kasekende (2008) submits that in the SSA region, the number of poor which was 200 million in 1981 almost doubled (i.e. 380 million) in 2005. Despite the fact that global poverty fell from 1.9 billion to 1.5 billion within the same period but for Africa, the situation was even worse.

In view of this ugly scenario, IDB (2006a, 2008d) noted that the poorest Muslim countries and communities are largely found in SSA where they suffer from unprecedented development deficits. Also, Africa hosts the highest percentage of

population living in pervasive poverty (less than $1 a day), low life expectancy, high infant mortality, high prevalence of AIDS and low human development index. In view of this scenario, Table 3.1presents the intensity of poverty in the various AMCs as reflected in the UNDP Human Development Report of 2010.

Table 3.1:
Poverty-Intensity of Deprivation in AMCs (2010)

S/N	**COUNTRIES**	**PERCENT**
1.	Algeria	N.A.
2.	Burkina Faso	64.9
3.	Chad	54.7
4.	Comoros	55.2
5.	Djibouti	47.3
6.	Egypt	40.4
7.	Gambia	53.6
8.	Guinea	61.3
9.	Libya	N.A.
10.	Mali	64.7
11.	Mauritania	57.1
12.	Morocco	48.8
13.	Niger	69.3
14.	Nigeria	57.9
15.	Senegal	57.4
16.	Sierra-Leone	60.0
17.	Somalia	63.3
18.	Sudan	N.A.
19.	Tunisia	37.1

Source: Extracted from UNDP HDR (2010).
Note: N.A. means data is not available.

It is glaring from Table 3.1that the intensity of pauperization among the populace in AMCs is very severe except for Tunisia with the lowest percent of 37.1. There is no doubt that countries like Niger (69.3), Burkina Faso (64.9), Mali (64.7), Somalia (63.3), Guinea (61.3), Sierra-Leone (60.0) and a host of other African countries are terribly hit by poverty. In this connection, Aznan (2008) observes that meeting the MDG target of reducing by half the number of poor people living below $1 a day is likely to be a herculean task because recent IDB estimates established 17 out of 22 Sub-Saharan African member countries are not on track. No wonder, Collier (2006) posits that Africa is indeed caught in the "Poverty trap", which is very overwhelming and devastating. Agubuzu (2004) submission on the serious challenge of poverty seems very relevant at this juncture: "The magnitude and expansion of poverty in Africa and the grave threat it poses to social, political and economic stability make it one of the biggest challenge facing the region" (p. 15).

It is against this backdrop that one will then appreciate why the first priority of MDGs is eradication of extreme poverty and hunger from the face of the earth, particularly in the less developed economies like Africa. This phenomenon has been responsible for a lot of social tensions and conflicts because a "hungry man is an angry man". Weiss (2008) captures this when he notes: "The Millennium Development Goals (MDGs) reflect the aspirations of the donor community, with the poverty target of halving extreme poverty between 1990 and 2015, no doubt symbolically, set as the first goal" (p. 408).

According to Abuzeid (2009), a World Bank estimates revealed that a US$10 billion increase in foreign aid would lift about 25 million people out of poverty as long as the lending favors country with sound economic policies and management but the figure will drop to only seven million if otherwise. One of the implications of these estimates is that an appropriately disbursed foreign aid to countries with good governance and sound economic policies could inspire virtuous cycle of development. This implication, which is a positive one, could be regarded as an interpretation of foreign aid being a "double-edged sword" as posited by Lancaster (1999). To this end, the diagram below further illustrates the relationships existing between poverty and other macroeconomic variables in the economy.

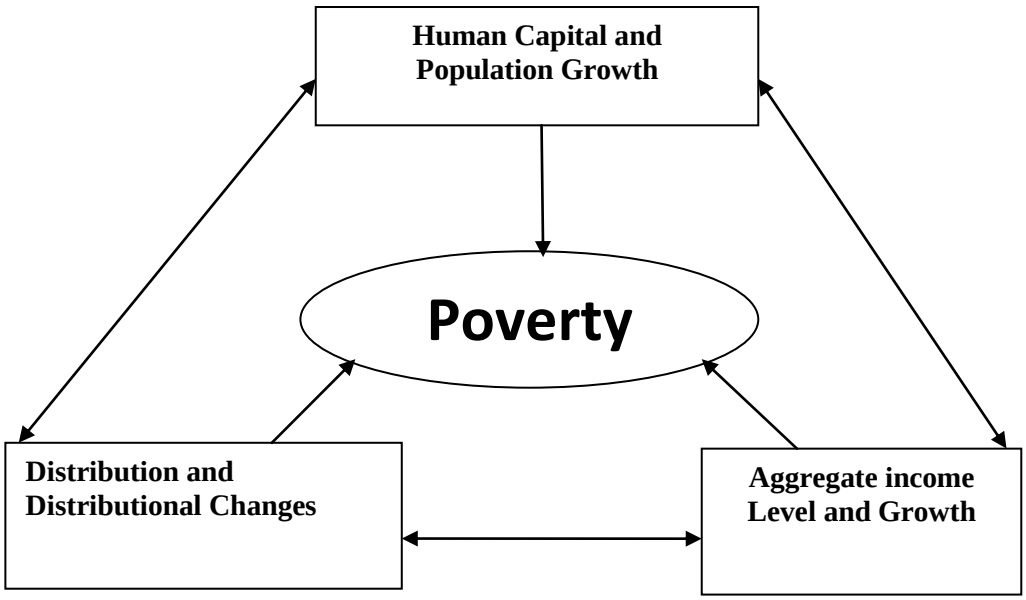

Figure 3.1:
Macro-Determinants of Poverty
Source: Adopted from Ahmed (2004).

Figure 3.1 also underscores the strategic initiative of IDB i.e. "the IDB Anti-Poverty Initiative" meant to take care of four priorities: (i.) reducing poverty among some of the poorest people in the world; (ii.) eliminating illiteracy; (iii.) eradicating infectious diseases such as malaria, tuberculosis and AIDS; and (iv.) increasing "human and productive capacities", particularly in the least developed nations that are members of the OIC (IDB, 2009a). No wonder therefore that Masoud (2011) posits that the two most fundamental drivers of Egypt revolution (i.e. Arab spring) are high level of poverty and unemployment in the country. However, poverty is often link to corruption, especially as the popular saying goes: "where there is poverty, there is corruption"; which is also very true with respect to Egypt and other African countries like Morocco and Nigeria. This is in view of the fact that resources that are meant for provision of basic necessities and amenities of life are squandered as a result of corrupt practices by the officials in charge. Werlin (2005) was forthright when he posits on the case of corruption in Nigeria: "….the country's endemic corruption is the primary cause for the country's poverty" (p. 524). He argued further that the more impoverished a country is, there is every likelihood that corruption is endemic in such country as the case with Nigeria-"the Giant of Africa".

To this end, Dollar and Kraay (2002) are of the opinion that standard growth-enhancing policies should be at the centre of effective poverty reduction strategy. Their study therefore identified four potential factors for improving the lots of the poor in the society and these factors are: (i.) primary educational attainment; (ii.) public spending on education and health; (iii.) labor productivity in agriculture

relative to the rest of the economy; and (iv.) formal democratic institutions. Similarly, four basic investments have been noted as the path to be followed in order to escape from extreme poverty: (i.) agriculture; (ii.) health; (iii.) education; and (iv.) infrastructure. In fact, one of the theoretical expectations and objectives of foreign aid is to serve as a measure and mechanism via poverty-reduction in LDCs (Collier & Dollar, 2002). Therefore, if there is any problem deserving the serious attention of donors and development partners of Africa like IDB, it should be poverty. This phenomenon could be tackled through massive program aid, sectoral aid and technical assistance among others, which should incorporate the four potential factors of poverty reduction listed above. In view of the foregoing discussion, poverty is therefore considered as an explanatory variable for growth in this study (see Figure 2.1). This is in line with the position of Clist (2011), who submits that poverty is thought to be a major motivation for foreign aid and indeed a good determinant of growth.

3.1.3 Corruption

Corruption is usually defined as the use of public office for private gains and benefits at the detriment of societal and collective interest. Transparency International (2010) defines it to mean the abuse of entrusted power for private gain. According Todaro and Smith (2009), it means "the appropriation of public resources for private profit and other private purposes through the use and abuse of official power or influence" (p. 818). This definition implies unethical behaviors such as bribery (use of a reward to pervert judgment), nepotism (bestowal of patronage or favor on people base on filial relationship rather than

merit) and misappropriation i.e. illegal appropriation of public resources for private uses (Dike, 2011; Werlin, 2005). He further noted that corruption is a global phenomenon and manifest in both petty and grand forms like bribery, embezzlement, fraud, favoritism, extortion and nepotism among others.

Consultancy Africa Intelligence (2010) notes that corruption seems endemic in most African countries, especially in countries where institutions such as the legislature are weak, the rule of law is not strictly enforced and political patronage is the order of the day. Similarly, countries where the independence and professionalism of public and private sectors have been eroded and a situation where the civil society lacks the means to hold corrupt individuals to accountability, make such country susceptible to high level corruption as the case with Somalia, Sudan and Chad. For instance, Williams (2005) submits that around 40 percent of the stock of African savings is held outside the continent and that US$15 billion goes out of Africa yearly. In the same token, Tax Justice Network (2008) observe that real capital flight in the last 35 years for 40 African countries in 2004 amounted to US$420 billion while accumulated stock of capital flight was about US$607 billion.

The serious implications of this trend are that capital flight, which is an aspect of corruption, diverts scarce resources in the continent away from domestic investment and other productive activities. It also accelerates the outflows of human capital, which is already inadequate for the continent development. Hence, lack of transparency, integrity and accountability are directly related to economic dismal performance, which have almost become permanent characteristics of

many African countries. More especially, corruption undermines effective governance and erodes the social and moral fabric of nations. These corrupt traits have been exemplified by various past and present African leaders like Mobutu of Zaire (now Democratic Republic of Congo-DRC), Abacha of Nigeria, Arap Moi of Kenya, Taylor of Liberia, Mubarak of Egypt, Ben Ali of Tunisia, Ghadaffi of Libya and Museveni of Uganda among others, especially in recent times, which eventually led to the popular and celebrated Arab spring.

Therefore, corruption serves as a clog in the wheel of economic growth process of the continent by limiting the pace, reducing the amount of public resources, discouraging private investment and savings and it further impedes the effective utilization of foreign aid. No wonder, Dike (2011) posits that the price of corruption is poverty. Thus, Consultancy Africa Intelligence (2010) note that corruption is therefore a development matter and "a complex issue with a vast array of determinants and effects that are often context and country specific". In the same vein, Gyimah-Brempong (2002) argues that corruption in the African continent is a systemic type due to the weak and fragile institutions prominent in most countries in the continent. However, the most identifiable cause of this monster that has eating so deep into the fabrics of the continent was the phase of unnecessary economic regulations, which were widespread in the 1970s and 1980s and have strongly persisted till today, especially in African countries like Nigeria, Somalia, Zimbabwe and a host of others.

Akonor (2008) submits that the African Union estimated that the continent loses US$148 billion or a quarter of its entire GDP to corruption on yearly basis. It is also disheartening to state that African leaders stole more than $140 billion of their state resources in the last four decades and over US$854 billion have been reported as illicit financial outflows from the continent during the same period (Dowden, 2011). Prominent among the leaders who looted his country was the former President of Zaire (now DRC). Mobutu Sese Sekou was richer than his own country which he ruled from 1965-1997 (Bovard, 1986; Ayittey, 2005). In fact, Lancaster (1999) described Mobutu as a case of profoundly corrupt and incompetent leader who rendered foreign aid ineffective despite the huge amount of foreign assistance he got, especially from the US, France and Belgium.

Furthermore, according to the Corruption Perceptions Index Report of 2007, nine countries have been classified as the most corrupt countries in the world and three of them are African countries i.e. Chad, Somalia and Sudan. Also, Transparency International Survey on Corruption for 2008 and 2010 revealed that most Sub-Saharan Africa countries surveyed are largely corrupt. The 2008 report notes that 64 percent scored less than 3 out of 10 and for the 2010 report, Botswana is the least corrupt with a score of 5.8 (Consultancy Africa Intelligence, 2010). As a matter of fact, the report in its 178 countries survey exposed Somalia as the most corrupt country in the world with score 1.10. Other AMCs belonging to the same category include: Sudan, Chad, Guinea and Comoros among others. In view of this phenomenon in the continent, Transparency International (2008) in its report on corruption submits that corruption is one of the daunting challenges to good

governance, development and poverty alleviation in the African continent. Against this background, we present the table below to provide more information on the state of affairs with respect to corruption in the AMCs.

Table 3.2:
Corruption Perceptions Index for AMCs (2010 & 2011)

S/N	**COUNTRIES**	**SCORE – 2010**		**SCORE – 2011**	
1.	Algeria	2.90	(105)	2.9	(112)
2.	Burkina Faso	3.10	(98)	3.0	(100)
3.	Chad	1.70	(171)	2.0	(168)
4.	Comoros	2.10	(154)	2.4	(143)
5.	Djibouti	3.20	(91)	3.0	(100)
6.	Egypt	3.10	(98)	2.9	(112)
7.	Gambia	3.20	(91)	3.5	(77)
8.	Guinea	2.00	(164)	2.1	(164)
9.	Libya	2.20	(146)	2.0	(168)
10.	Mali	2.70	(116)	2.8	(118)
11.	Mauritania	2.30	(143)	2.4	(143)
12.	Morocco	3.40	(85)	3.4	(80)
13.	Niger	2.60	(123)	2.5	(134)
14.	Nigeria	2.40	(134)	2.4	(143)
15.	Senegal	2.90	(105)	2.9	(112)
16.	Sierra-Leone	2.40	(134)	2.5	(134)
17.	Somalia	1.10	(178)	1.0	(182)
18.	Sudan	1.60	(172)	1.6	(177)
19.	Tunisia	4.30	(59)	3.8	(73)

Source: Extracted from Transparency International Reports (2010, 2011).
NB: The figures in parentheses represent the global ranking of the country.

Evidently, it is clear from the reports presented in Table 3.2 that corruption has gained full control of AMCs because none of the country scores the average value of 5. By the rule of thumb, any score less than 5 connote prevalence of high level corruption in that country. According to Transparency International (2011), CPI score relates to perceptions of the degree of corruption in various countries as seen and felt by business people, risk analysts and the general public. Hence, the score ranges from 0-10; where 10 imply highly clean country and 0 means highly corrupt country. Therefore, the serious implication of the table presented above is that all AMCs are suffering from corruption trap, which is a serious monster that hampers the wheel of economic progress. Even the highest scores of Tunisia, which could be regarded as outstanding among the AMCs are less than 5. Thus, this scenario qualifies Tunisia as the best among the worst and thereby confirming the popular adage of the one-eyed man among the blinds.

In view of this embarrassing scores for AMCs, there is no gainsaying that most AMCs are largely corrupt like other fellow African countries and this speaks volume about their level of Islamic commitments to Islamic moral ideals and economic teachings, which essentially condemn wastage and corruption in its entirety (see Qur'an 7:56 & 17:26-27). Against this background of wide scale corruption in AMCs, it could be posited that corruption has become a cankerworm and monster that can easily destroy and consume these countries, because corruption is a growth-retarding factor. Hence, in order for foreign aid to be more contributive and effective in the growth process of aid-dependent continent like Africa, donors must give preference to program, project aid and technical

assistance as against money/financial aid, which is largely susceptible to high level of moral hazard and aid fungibility. More so, it is often argued that low corruption is good for growth and investment but the present state of endemic corruption in the continent is certainly a bad omen for its growth process.

Essentially, the institutional failures that encourage and promote corruption have been identified and summed up as: C=M+D-A (where C means Corruption, M stands for Monopoly, D for Discretion and A means Accountability) (Consultancy Africa Intelligence, 2010). The implication of this is that corruption is promoted when there is monopoly especially of power and authority, which allows African leaders to prefer their discretions above consultation and eventually makes them unaccountable to the people. Therefore, as long as corruption is allowed to continue to have a field day, there is no amount of foreign aid that will do growth magic in poor countries as the case with Africa, where the greed of its leaders knows no bound. It is therefore important to state that anti-corruption measures should be made part and parcel of the Africa's development agenda, especially with respect to foreign aid administration by donors like IDB. This would ensure future growth and by extension prosperity in the continent. To this end, Gambari (2004) made a clarion call to the international community to assist in checkmating this devastating phenomenon and tendency in the continent:

> There is accumulating evidence that combating corruption requires international cooperation involving foreign governments, foreign banks and foreign financial supervisory and regulatory institutions. Africa's development partners must help enforce what they preach: they need to support African governments to repatriate ill-gotten wealth deposited in their countries' banks. It is to be hoped that the recent United Nations Convention Against Corruption would, *inter alia* facilitate the realisation of this important objective. (p. 22)

3.1.4 Infrastructure

Another major developmental challenge facing Africa is the poor state of infrastructures. Most African countries lack the required infrastructures needed to propel growth and development. And as rightly put by Kasekende (2008): "the investment climate in Africa is hampered by poor and costly infrastructure" (p. 20). Similar point was earlier made by Agubuzu (2004) as well as Kimenyi and Mbaku (2003) that most African countries suffer from poorly developed economic infrastructure as well as serious shortage of both human and physical capital. World Bank (2008) findings revealed that Africa is facing an infrastructure financing gap of US$35 billion per year. It also confirms significant facts about the enormity of Africa's infrastructure requirements, especially for the 24 countries covered by the research.

To this end, the following include the salient facts identified with respect to the infrastructural challenges confronting the continent by World Bank (2008): (i.) cost of redressing Africa's infrastructure deficit is a whopping $75 billion every year, which splits between investment needs of $38 billion and $37 billion for operations and maintenance; (ii.) The annual estimate of investment needs of $38 billion annually is twice as high as an earlier estimate by the Commission for

Africa; (iii.) African countries are devoting more of their own resources to infrastructure than was previously thought, between 6-8 percent of GDP; (iv.) Utility inefficiencies run high, and waste US$6 billion annually; (v.) Under-pricing of services below cost-recovery levels result in financial losses of US$5 billion every year; (vi.) Power supply or the lack of it – is by far Africa's greatest infrastructure challenge. And on every indicator, the power sector lags behind other developing countries.

For instance, the 48 countries of Sub-Saharan Africa generate roughly the same amount of power as Spain; (vii.) Sixty percent of Africa's hydroelectric potential is found in the Democratic Republic of Congo and Ethiopia, and these are countries too poor to raise the multi-billion dollar financing needed to develop them. IMF (1995) argues that foreign aid can have beneficial effects on the economies of recipient countries, if it helps in the development of social and physical infrastructures, thereby boosting employment and enhancing productivity. As a matter of fact, IDB should therefore be interested in channeling some of its development assistance to this important aspect of the economy of African countries.

3.1.5 Good Governance

According to UNDP (2002)**,** good governance means "the striving for rule of law, transparency, responsiveness, participation, equity, effectiveness and efficiency, accountability and strategic vision in the exercise of political, economic, and administrative authority". Abdullahi (2009) notes that good governance is at the centre of sustainable development and poverty alleviation, which is particularly

good for economic growth in LDCs. Specifically, Dollar and Levin (2006) emphasized that economic governance plays key role in providing the enabling atmosphere and environment for growth and poverty-reduction as well as for the effectiveness of foreign aid. Moreover, Kasekende (2008) identifies that the concept of governance in the general sense as a significant factor in explaining the resource curse from commodity booms countries like Sudan, DRC, Angola, Chad, Nigeria and a host of others.

Rotberg (2004, 2006) also notes that Africa is unfortunately dominated by conflicts and poor growth due to bad governance and deficient leadership; whereas at the beginning of independence, large number of African leaders are responsible leaders and he posits, "but now there are only a few African nations with long traditions of good governance and effective leadership" (p. 11). Leadership and governance in the Africa continent are highly dominated and characterized by repression, dictatorship and autocracy. It is not surprising when Werlin (2005) posits that African leaders like the case in Nigeria have a great capacity for autocracy and dictatorial tendencies but only exercise limited capacity for governance. Similar position was earlier expressed by Brautigam and Knack (2004) in their article on foreign aid, institutions and governance in SSA. They submitted that at the foundation of Africa's development problems is governance crisis, which implies poor quality institutions, weak rule of law, absence of accountability, tight controls over information and high levels of corruption virtually in all African countries. Easterly (2005) corroborates this position by stating that among the eight failed states known in the literature seven

of them are from Africa (i.e. Angola, Burundi, Liberia, Sudan, Sierra Leone, Somalia and DRC), which is a consequence of bad governance in these countries.

It is sad to note that the style of leadership in most of these African countries is tending towards the sit-tight models as exemplified in the late Mobutu Sese Sekou of Zaire, Idi Amin of Uganda, Arap Moi of Kenya, Samuel Doe of Liberia and Sanni Abacha of Nigeria. And in recent times, cases likes Mugabe of Zimbabwe, Charles Taylor of Liberia, Museveni of Uganda, Ben Ali of Tunisia, Mubarak of Egypt, Ghadaffi of Libya and a host of others have become important flash points of reference on the issue of bad governance in the continent. Collier and Gunning (1999) aptly captures the leadership crisis in Africa when he posits in the following words: "the leadership of many African nations hardened into autocracy and dictatorship" (p. 3). In fact, Masoud (2011) described the Mubarak's regime and display of power as "durable authoritarianism" (p. 21), which eventually led to the collapse of the regime in the face of the popular Egypt revolution. This reckless and ruthless display of power by most African leaders has contributed in no small measure to the backwardness and underdevelopment of the continent.

Moreover, there are also the theoretical expectations that foreign aid should encourage and promote good governance in LDCs and provide the enabling environment for the formulation and implementation of growth-promoting policies. No wonder therefore that good governance is regarded as central and most paramount to the development process. This position is aptly noted by Lancaster (1999) when he submits that foreign aid is often used to promote good governance via strengthening budget and accounting system of recipient

countries. It also assists in the training of civil servants, judges, journalists and it could serve as incentive to governments to put in place the required political reforms as the case of Korea demonstrated. In view of this, IDB (2006a) identified that one of the major challenges confronting the Muslim world and particularly the member countries is fostering and promoting better governance. This is because most member countries are largely characterized by pervasive corruption, poor service delivery, lack of transparency and accountability, which are all opposite features of good governance.

In this connection, the position of IDB on good governance for Africa's development is captured thus, "The IDB supports the commitment of its member countries, especially those in the Africa region, to intensify their efforts for promoting growth of good governance….." (IDB, 2006a, p. 58). Hence, with good governance, the effective exercise of power and authority in a manner that promotes and serves the interest of the masses is achieved and promoted. This is because, good governance is expected to cover five categories of essential political goods as identified by the Ibrahim Index of African Governance and these are: (i.) Safety and security; (ii.) Rule of Law, Transparency and Corruption; (iii.) Participation and Human Rights; (iv.) Sustainable Economic Development; and (v.) Human Development (AfricaFocus Bulletin, 2007). These five categories of political goods represent the performance of any government at any level.

However, Kimenyi and Mbaku (2003) noted that in the last forty years, most African countries have been characterized by poor leadership, poorly developed infrastructure and serious shortage of both human and physical capital. Therefore,

it is hoped that the DA of IDB would make good governance an important area of emphasis in its administration of development assistance to African countries. More so according to Meidan (2006), various international institutions like EU, IMF, OECD and others link the development aid to the promotion of political transparency and good governance in the African continent.

3.2 Africa and Foreign Aid in Historical Perspective

Loxley and Sackey (2008) opined that Africa's development is an aid-dependent one, which confirmed an earlier submission by Lancaster (1999) that Africa seems to be a victim of aid-dependence syndrome. And that perhaps explain the 30 percent share of the overall donor aid commitments and allocation to the continent up till 1985. These commitments and allocations were made in view of the continent's development needs, oil price shocks, harvest failures, world economic recession and the African development crisis. However, aid to Africa as a share of total aid to developing countries reached a high time peak of 38 percent from 1985-1994 but by 1995-2004, this share of aid fell to 31 percent and the total net aid in real terms decreased to $23.4 billion from 1985-1994 level of $27.3 billion. It is however important to state that aid inflows into the continent are made up of both bilateral and multilateral sources with the latter ranging between 26 to 34 percent of total net aid disbursements. This is because multilateral sources are made up of aid contributions from various developed and wealthy countries, especially the 34 member countries (see Appendix F) of OECD (OECD, 2011; Todaro & Smith, 2009).

The member countries like the UK, Japan, Italy, Germany, France, Canada, US, Denmark, Netherlands, Sweden, Spain, Australia, Portugal and Belgium among others, are expected to contribute annually 0.7% of their GNI (Gross National Income) to finance development in LDCs and developing countries through ODA. This is in line with the UN General Assembly promise made in 1970 (OECD, 2002). From Table 3.3 below, it gives a clear picture of aid inflows to Africa since 1975 to 2004. It revealed that the total real net ODA to Africa from 1975 to 2004 amounts to US$71.8 billion. Although, average per annum of total net disbursements significantly increased from US$8.9 billion in 1975-1984 to US$19.7 billion in 1985-1994 and to a slight increase in 1995-2004 to US$20.4 billion. Total real net ODA disbursements to the continent reached its peak from 1985-1994 with US$27.3 billion but dropped to US$23.4 billion from 1995-2004. According to Bond (2001), even with the fall in aid inflows to the continent, it still remains a vital determinant of many countries' political and economic conditions like cases of Mozambique, Somalia, Niger and a host of others. To this end, the table below gives more insight into aid inflows into the continent for the last 30 years (i.e. 1975-2004) in line with ODA recommendation, endorsement and disbursements.

Table 3.3:

Aid Disbursements, Grant Composition and Distribution in Africa (1975-2004)

	1975-1984	1985-1994	1995-2004
Africa's total net disbursements (current US$ billions) average per annum	8.9	19.7	20.4
Africa's total real net ODA disbursements (constant 2004 US$ billions)	21.1	27.3	23.4
Total net aid disbursement ratio (%)	91.5	82.0	90.1
Multilateral aid ratio (%)	26.4	30.4	34.3
Multilateral aid disbursements ratio (%)	89.7	78.1	90.1
Grants share in total ODA (%)	58.7	65.4	71.7
Africa's share of total donor aid commitments (%)	33.9	38.4	31.3
West Africa's share of total net ODA disbursements to Africa (%)	22.3	26.8	28.4
North Africa's share of total net ODA disbursements to Africa (%)	38.6	23.8	17.0
Central Africa's share of total net ODA disbursements to Africa (%)	10.0	9.2	10.8
East Africa's share of total net ODA disbursements to Africa (%)	19.1	23.8	25.7
Southern Africa's share of total net ODA disbursements to Africa (%)	10.1	16.3	18.1

Source: Adopted from Loxley and Sackey (2008).

The table revealed that Africa as a continent has benefitted the sum of US$71.8 billion during the period under review i.e. between 1975-2004 as foreign aid. This amount could be considered as the total real net ODA disbursed to the continent as evidenced in the table presented above. There is no doubt, this amount is far less compared to the figures of Easterly (2005) of US$568 billion and the annual average of US$15 billion of Werlin (2005). In view of this, the table below provides a summary of the various figures collated on the total amount of aid to the African continent.

Table 3.4:
Summary of Figures on Total Aid to Africa

Author	**Amount**	**Period**	**Source**
Easterly (2005)	US$568 billion	1960 – 2005	ODA
Werlin (2005)	US$600 billion*	1965 – 2005	ODA
Akonor (2008)	US$600 billion	1960 -- 2008	ODA
Loxley and Sackey (2008)	US$71.8 billion	1975 – 2004	ODA
Easterly and Williamson (2011)	US$690 billion**	1960 – 2008	ODA
IDB (2010)	US$20.85 billion***	1976 – 2010	IDB

Source: Compiled by the Researcher from various articles.
Note: *Estimated by using US$15b annual average stated by the Author.
**Estimates using 15% of US$4.6 trillion (see Figure 5) stated by the Authors and
***See Table 3.7 below.

The significance of the table presented above is to provide a better perspective on the total aid stated by various authors in their articles, especially as it relates to ODA. However, this study adopted the estimation made for Werlin (2005) because it seems to provide a fair figure of total aid disbursed to the continent, especially if we consider the ODA statistics provided in Figure 3.2, which shows that Africa only received 15 percent. Notwithstanding this huge amount spent over the years, Gambari (2004) notes that the urgent need to increase ODA to Africa considering the enormous developmental challenges has become more imperative. Also, improving its quality should be regarded as some of the most tangible ways by which the international community can make meaningful contributions to the implementation of NEPAD. He also observed that when the United Nations New Agenda for the Development of Africa was adopted in 1991,

the target for ODA flows to Africa was set at US$30 billion per annum based on anticipated annual growth rate of 4 per cent throughout the ten years life-span of the development agenda. However, Hoa (2007) submits that the sum of US$60 billion was realized as ODA in 2005, which was far lower than the anticipated estimate. This is also a plausible reason why the amount disbursed to Africa have been fluctuating thus, making inflow to the continent volatile.

Unfortunately, ODA flows to Africa fell significantly from US$28.62 billion in 1990 to US$16 billion in 2000, which amounted to a 43 percent drop. However, the years 2001 and 2002 witnessed a modest improvement from US$17.729 billion to US$18.615 billion respectively. It must be stated that despite rise and fall in aid to Africa, the significant impact on the continent's economic growth has been a serious issue of concern to donors, economists and researchers. This is because the evidences on ground do not point to significant impacts on the economies of Africa as noted by some writers and scholars like Easterly (2005). Furthermore, the distribution of ODA between 1970 and 2006 has shown in the diagram below reveals that Africa as a whole received 15 percent of the total aid disbursed within the period under review if compared to other regions and continents.

According to IDB (2008f), even though the ODA commitments to developing countries increased from $114.9 billion in 2005 to $122.1 billion in 2006, it was observed that commitments to IDB member countries (as a group) declined from $56.5 billion to $50.9 billion i.e. down by 9.8 percent during the same period. Nevertheless, in 2006, the highest commitment was made to Nigeria ($11.7

billion), followed by Iraq ($7.8 billion), Indonesia and Afghanistan ($3 billion each) and Cameroon ($2.1 billion). It is evident therefore that most IDB member countries, especially from Africa were not favored by aid increment in 2006. The diagram below further provides more insight on the aid inflows to the various continents from 1970 and 2006.

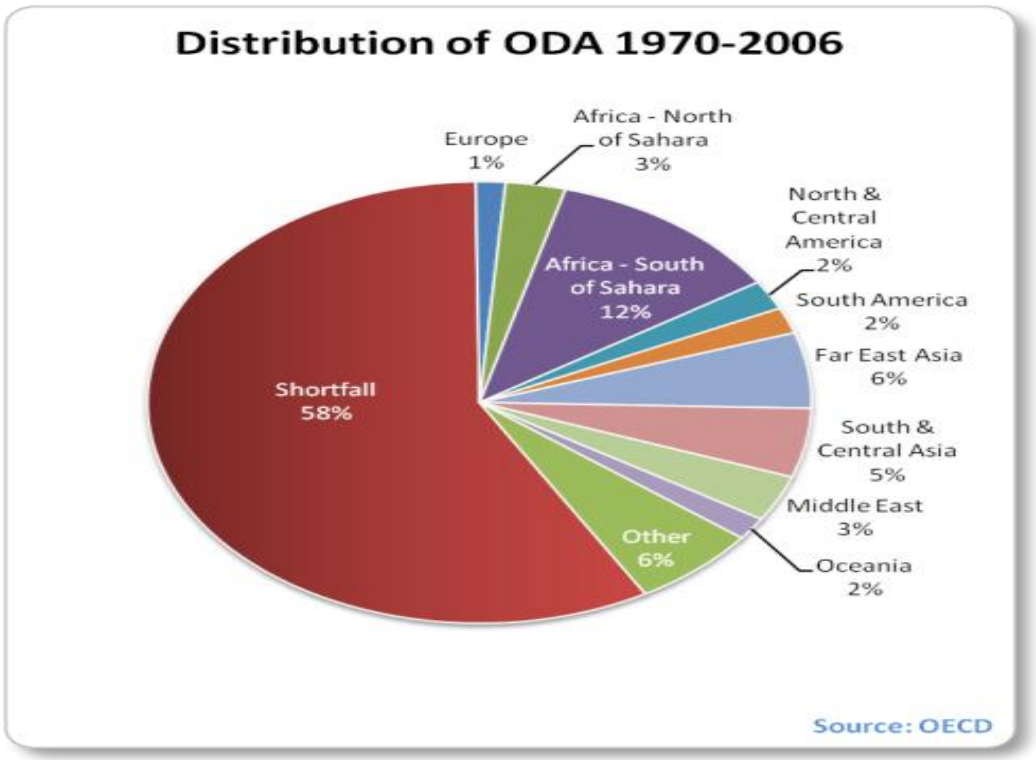

Figure 3.2:
ODA Distribution from 1970-2006
Source: Adopted from OECD (2008).

Easterly (2005) notes that the call to assist Africa started with leading figures like Walt Rostow and John F. Kennedy in 1960 to Jeffrey Sachs and Tony Blair in 2005, when they were asking for more aid to Africa. Even though, huge amount have been spent on Africa, the bulk of the countries rank low in virtually

everything on standard of international comparisons like low income per capita, highest percent of population living in extreme poverty (less than $1 a day), high infant mortality rate and AIDS pandemic among others. However, some of the African countries considered as success stories as far as foreign aid positive impact on growth is concerned includes Ghana, Uganda, Mali, Mozambique and Tanzania while failure countries identified include Togo, Ivory Coast and particularly Zimbabwe, which was identified to be witnessing its worst economic and humanitarian disasters due to its economic inflation rate put at over 1,000 percent, the highest and the worst in the world (Calderisi, 2006).

Notwithstanding the fact that some studies found positive and significant impact of foreign aid on the economic performance of some developing countries, donor institutions and agencies need to create internal mechanisms and incentives that foster selectivity. Also, they should focus on large-scale finance on developing countries with good policies and institutional framework. This position, if adopted could go a long way in strengthening the development process of committed African countries. More so, the adoption of Easterly's (2005) recommendations on how foreign aid could be more effective is also necessary for donors' considerations. On this note, IDB (2007) states as follows:

> The efforts which African countries have been making to improve aid effectiveness by undertaking macroeconomic reforms, working in closer cooperation among themselves and in partnership with developed countries are still to result in large increases in ODA flows. (p. 42)

3.3 Foreign Aid in IDB Member Countries

Foreign aid or development assistance as it is often referred to by IDB is a major function of the Bank in almost four decades of its existence and operations. As such, member countries and even non-members like Bosnia, Eritrea, Thailand, China and USA among others have benefitted from its numerous activities. According to IDB (2008b), "Most of IDB member countries depend on sustained flow of external resources, especially for their public investment programs in the infrastructure and social sectors" (p. 26). However, development assistance to member countries takes different forms according to IDB (2004) and they are identified as follows: i. Project financing; ii. Technical assistance; iii. Focus on the Least Developed Member Countries (LDMCs) which could take any of this form i.e. concessional financing, LDMCs Special account and Ouagadougou declaration; iv. Participation in the HIPCs Debt Initiative; and v. Co-financing arrangements. Furthermore, the Bank's priority areas include: human development, agricultural development and food security, infrastructure development, intra-trade among member countries, private sector development, research and development (R&D) in Islamic economics, banking and finance.

3.3.1 IDB Activities in Member Countries: An Overview

IDB is a multilateral development institution and the largest trade and financing institution in the Muslim world. It was established in pursuance of the Declaration of Intent issued by the first Conference of Finance Ministers of Muslim Countries held in Jeddah (1393H/1973). However, the formal establishment and

commencement of activities of the Bank was in 1395H/1975. The main shareholders of the Bank are presented in Table 3.5.

Table 3.5:
The Major Shareholders of IDB

S/N	COUNTRY	CONTINENT	SHARES (%)
1.	Saudi Arabia	Asia	23.6
2.	Libya	Africa	9.47
3.	Iran	Asia	8.28
4.	Nigeria	Africa	7.69
5.	Qatar	Asia	7.21
6.	Egypt	Africa	7.10
7.	Turkey	Europe	6.48
8.	U.A.E.	Asia	5.81
9.	Kuwait	Asia	4.48
10.	Other Member Countries	Various Continents	16.87

Source: Adapted from IDB (2011a).

Importantly, the Bank maintains a 37 percent portfolio of liquid assets of its total assets, which is regarded as a very high liquidity to assets ratio. Also, the Bank has equity stakes in several Islamic financial institutions in various countries like in the Gulf countries, Turkey, North Africa countries, Albania, Bosnia and Bangladesh. No wonder therefore that the Bank has gained the highest credit rating in the Middle East. For instance, in April 2003, the IDB was included in the zero-risk weighted multilateral development bank (MDB) category by the Basel Committee of the Bank of International Settlements (BIS) in the company of illustrious counterparts like the World Bank, European Bank, AsDB, European Investment Bank (EIB), Inter-American Development Bank, European Bank for

reconstruction and Development (EBRD) and Nordic Investment Bank (NIB) (Ahmed, 2009; IDB, 2005).

Against this background, the purpose of the Bank is to foster the economic development and social progress of member countries and Muslim communities individually as well as collectively in accordance with the principles of Shari'ah i.e. Islamic Law. It engages in a wide range of specialized and integrated activities and they include: resource mobilization, investment, public and private sector financing, trade financing, technical assistance for capacity building, technical cooperation among member countries, debt relief, emergency relief and a host of others (IDB, 2009a, 2011a). Ahmed (2009) notes that IDB has greatly contributed in improving the economic performance of the member countries and it has equally assisted in raising awareness and upgrading education, especially that most of these countries suffer from various socio-economic and political problems like inequality, poverty, unemployment, inflation, political instability and tension, especially in African countries like Somalia, Niger, Chad and a host of others.

Moreover, the main functions of Islamic Development Bank are contained in its Articles of Agreement. Also, in line with its overall objectives of fostering economic development and social progress, the Bank participates in the financing of productive projects and programs both in the public and private sectors in member countries. In almost four decades, the Bank has been investing in economic and social infrastructural projects, provides technical assistance to member countries and also assists in the promotion of foreign trade, especially capital goods. The Bank does assist Muslim communities in non-member

countries like Bosnia and it undertakes intellectual activities such as conducting Shari'ah-based research studies in Islamic economics and banking through special funds allocated for this purpose (IDB, 2005).

Furthermore, in order to accomplish and achieve its laudable tasks and objectives, it collaborates and interact with prominent international, multinational and regional financial institutions like the World Bank, Arab Fund for Economic and Social Development, Saudi Fund for Development, Kuwait Fund for Arab Economic Development, OPEC Fund for International Development, Abu Dhabi Fund for Development, Arab Bank for Economic Development in Africa, African Development Bank, Asian Development Bank and European Bank for Reconstruction and Development. In view of this, IDB (2009a) posits:

> The IDB development assistance is geared to achieve targets of the Millennium Development Goals (MDGs) and the IDB 1440H Vision. In particular, the overriding purpose of development assistance is to alleviate poverty and achieve comprehensive human development. Over the past thirty-five years, the Bank provided development assistance to member countries for the key sectors of their economies such as public utilities, transport and communication, social services, agriculture, industry and mining and financial services. (p. 5)

The Bank is made up of 56 member countries (see Appendix A) spread across four continents i.e. Africa, Asia, Europe and Latin America with approximately 1.55 billion people as at 2010 (see Appendix C), which represents over one-fifth of the world's population. All the member countries are part and parcel of Organization of the Islamic Conference, which is the umbrella body and the Bank serves as its financial wing as noted by (Pramanik, 2003). Hence, the Bank in almost four decades of its existence and operations has been contributing

immensely to the socio-economic advancement of its member countries and the world at large through its numerous activities and indeed, Africa has been one of the major beneficiaries. More so, Africa alone has 27 countries as members of the Bank and in the Bank classification of Least Developed Member Countries (LDMCs) of 28 countries (see Appendix D), 18 of these countries are African (IDB, 2008a). By virtue of being members of this special group, they enjoy a lot of privileges in terms of allocations and projects execution of the Bank, which aimed at poverty alleviation, boosting economic growth and enhancing institutional capacity so as to manage and sustain development projects and programs. More so, most of the activities in the LDMCs are concentrated in education, health, agriculture and water supply sectors (IDB, 2004).

Importantly, USAID (2004) recommends: "Donor programs and policies designed to accelerate the rate of economic growth in Muslim countries should focus on these areas-the economic policy environment, the banking system, the design and implementation of social safety nets for the poor, especially through private charitable Islamic organizations and women". Thus, majority of the IDB development assistance are in line with these recommendations of USAID. Similarly, IDB Group provides development financing to both public and private sectors in member countries through four major types of operations i.e. project financing, trade financing, technical assistance and special assistance operations. To date i.e. since 1976-2010, IDB cumulative development assistance (net approval) to both member and non-member countries stand at over US$70.321 billion according to the table presented below.

More so, additional resources amounting to ID3 billion i.e. US$4 billion has been estimated to be spent as development assistance on projected growth in IDB member countries between 1429H and 1433H. However, according to IDB (2011b), the Bank's activities are dominated by trade financing which accounts for 52.5 percent of total financing, followed by project financing, which was 46 percent, special assistance was 1percent and technical assistance was 0.5 percent. The table below provides the cumulative figures for the development assistance of IDB Group from 1976-2010.

Table 3.6:
Cumulative Development Assistance of IDB to Member Countries from 1976-2010 (values in US$ m)

Country	Project Financing	Technical Asst.	Trade Financing	Special Asst.	Grand Total
Afghanistan	76.9	1.4	0.0	15.8	94.1
Albania	186.6	1.1	5.0	1.4	194.2
Algeria	591.7	4.0	1887.7	5.6	2489.1
Azerbaijan	706.9	3.2	78.9	2.0	791.0
Bahrain	1385.8	1.3	286.5	0.0	1673.6
Bangladesh	856.1	5.2	7733.7	35.6	8630.6
Benin	227.3	7.1	35.0	1.4	270.8
Brunei	49.2	0.3	0.0	0.0	49.5
Burkina Faso	347.0	12.6	206.1	8.8	574.5
Cameroon	185.4	3.6	17.0	1.7	283.4
Chad	312.3	6.3	3.2	10.8	332.5
Comoros	11.1	4.9	7.5	1.1	24.5
Cote d'Ivoire	279.8	0.4	76.3	1.2	357.7
Djibouti	242.9	3.7	12.0	2.3	260.9
Egypt	907.8	3.9	2323.4	1.5	3236.7
Gabon	409.5	2.2	0.0	0.0	411.8
Gambia	165.2	4.5	103.0	1.8	274.6
Guinea	327.9	10.7	48.8	7.8	395.2
Guinea Bissau	2.2	3.8	15.0	1.2	22.3
Indonesia	1392.7	3.2	902.3	4.4	2302.5
Iran	12252.1	6.6	2481.8	13.3	4753.8
Iraq	68.2	1.3	301.3	5.5	376.2
Jordan	917.7	6.5	824.8	0.3	1749.3
Kazakhstan	471.4	2.4	101.0	1.9	576.7
Kuwait	268.5	1.6	1131.5	7.5	1409.1
Kyrgyz Rep.	124.2	4.0	0.0	2.4	130.6
Lebanon	825.9	5.7	221.5	9.8	1062.9
Libya	386.0	3.3	299.8	3.8	692.8
Malaysia	1115.0	1.4	281.7	11.4	1409.5
Maldives	113.4	2.2	119.0	0.8	235.4

Mali	446.5	12.0	199.8	16.5	674.9
Mauritania	523.4	23.0	84.5	11.1	642.0
Morocco	1619.7	5.5	2389.3	1.5	4016.0
Mozambique	126.6	2.3	15.0	2.2	146.1
Niger	271.6	14.5	138.3	12.2	436.6
Nigeria	90.5	0.3	205.0	7.9	303.7
Oman	598.1	2.4	2.0	0.5	603.0
Pakistan	2245.4	2.5	5191.1	11.7	7450.6
Palestine	82.0	6.7	0.0	53.3	142.0
Qatar	590.0	0.1	0.0	0.0	590.1
Saudi Arabia	1654.9	3.7	2750.9	0.1	4409.6
Senegal	588.7	11.3	272.6	14.2	886.8
Sierra Leone	121.8	7.1	5.0	3.6	137.5
Somalia	24.1	4.0	46.2	13.3	87.6
Sudan	1065.8	5.4	372.4	23.5	1467.0
Suriname	32.3	0.2	10.0	0.2	42.7
Syria	921.2	1.6	130.5	0.3	1053.5
Tajikistan	173.0	4.4	24.0	1.5	203.0
Togo	113.2	2.2	6.0	1.7	123.1
Tunisia	757.2	2.5	1094.9	4.2	2208.6
Turkey	1442.1	5.2	3226.2	20.4	4693.9
Turkmenistan	306.9	0.8	0.0	0.3	308.0
UAE	756.0	0.9	469.7	0.0	1226.6
Uganda	69.9	4.4	13.9	4.5	92.6
Uzbekistan	476.3	2.1	50.0	1.9	530.2
Yemen	515.7	9.1	420.3	8.6	953.7
Regional	713.5	90.3	142.0	61.9	1007.7
Special	85.0	0.0	20.0	0.0	105.0
Non-MCs	272.2	0.9	176.0	263.9	713.0
Net Approval **Gross Approval**	**32,315.8** **35,860.0**	**343.7** **364.1**	**36,959.3** **41,920.4**	**702.1** **710.1**	**70,320.9** **78,854.6**

Source: Extracted from IDB Annual Report (2010).

Table 3.6 reveals that IDB has spent over US$70 billion as development assistance in almost four decades of its existence and operations. Cumulatively, Bangladesh ($8630.6m) is the topmost beneficiary followed by Pakistan ($7450.6m) and Iran ($4753.8m). Whereas, the least recipient countries are Guinea Bissau with $22.3 million, Comoros got $24.5 million and Suriname received $42.7 million. As a matter of the Bank strategic plan for poor member countries in 1992 was the establishment of a Special Account for Least Developed Member Countries, which serves the purpose of financing projects that will address their urgent and basic needs. The first allocation to this account was $100

million and in 1999, a new allocation of $150 million was made. Under this program, the loans to be provided shall enjoy 30 years repayment period including 10 years of grace period and the service fee covers only a part of the actual cost of administering the loan, which does not exceed 0.75% per annum. This is the operational principles of the Bank which makes it different from other banks, because it does not charge interest (IDB, 2005).

It is in this vein that Nelson and O'Keefe (2010) noted that the IDB's interpretation of Islamic law prohibits the mixture of interest-based money with non-interest-based and as a matter of fact, projects co-financed by the IDB and other MDIs are restricted. They reported that in their survey on environmental lending by international organizations and its impacts, over 1000 IDB project loans from 1980-2000 were examined. Their findings revealed that IDB environmental lending increases in response to the World Bank. The impact was that more of IDB member countries benefitted more in view of its foundational and operational philosophy of fostering economic growth in the Muslim world. They also noted that the IDB has even funded several developmental projects in the US and other developed countries.

In this connection, the IDB approved long-term loans totaling $19.7 billion to 13 countries in 1978, financed two leasing operations and bought a cargo ship and tractor for two countries which cost $4.4 billion. Similarly, the Bank backed foreign aid trade deals with eight different countries amounting to $26.8 million. By the mid-1979, the Bank financed 103 projects worth $810 million (Saudi Armco World, 1979). More so, IDB has been participating in the Heavily

Indebted Poor Countries (HIPCs) Program of the World Bank/IMF since 1997 in rescheduling debts of its eligible member countries. Among the 41 eligible HIPCs, 21 are IDB member countries and it was estimated that the debt-relief shall cost IDB around $155 million (IDB, 2009a).

Meanwhile, the Bank sets four overall priorities for itself: (i.) Reducing poverty among some of the poorest people in the world; (ii.) Eliminating illiteracy; (iii.) Eradicating infectious diseases such as malaria, tuberculosis and AIDS; and (iv.) Increasing "human and productive capacities", particularly in the least developed nations that are members of the Organization of the Islamic Conference. However, according to the new vision statement of IDB, it requires that its mandate be transformed and greatly widened as well as diversifying its development focus. This perhaps is aptly captured in the following words: "The mission of IDB is to promote comprehensive human development with a focus on the priority areas of alleviating poverty, improving health, promoting education, improving governance and prospering the people" (IDB, 2006a, p. 20).

Importantly, it is worthy to state that IDB foreign aid activities differ from other donors in the following ways: (i.) all activities, policies and principles are based on the *Shari'ah*; (ii.) all loans are interest free; (iii.) administration of foreign aid is mostly to member countries and minority Muslim countries; and (iv.) loans, grants and other forms of aid are given without unnecessary and malicious conditions attached to them. However, the development assistance is to be used for promoting economic growth and development of the recipient countries and

loans must be redeemed based on terms of reference. In line with these peculiarities of IDB, Pramanik (2003) posits:

> The OIC and IDB have a tremendous potential to ensure political and economic democracy within the Ummah. However, if they want to realize this potential, the OIC has to formulate policies based upon the member states' human and physical capital resources, and the IDB (the OIC's financial wing) must finance social investment projects (i.e. those related to education, health and research). (p. 80)

In line with this development assistance of IDB, Sadeq (1990) states: "If the Muslim Ummah follows the economic code of Islam, economic development is expected to be a natural outcome of the Islamic value system" (p. 119). In view of these submissions, this study seeks to investigate the impact of its development assistance on the economic growth of the Muslim member countries within the African continent. Moreover, a study of this nature shall provide avenue for stock taking on the various activities of the Bank in the last three decades. Thus, providing the academic and intellectual platform for identification of likely problems and challenges and thereby offering recommendations to fast track the development process in the countries of our study and by extension in Africa at large and other member countries, especially the LDMCs.

3.3.2 IDB and Foreign Aid in Africa

Importantly, the Bank initiated a development policy in recognition of the socio-economic challenges facing member countries in sub-Saharan Africa. The initiative has been tagged as "Special Program for the Development of Africa (SPDA)" and five critical sectors have been identified for its operational activities: (i.) productivity growth in agriculture to achieve food security; (ii.)

education projects to generate skilled workforce; (iii.) health projects focusing on the fight against major communicable diseases; (iv.) water and sanitation projects to improve quality of life; and (v.) power generation and distribution projects (IDB, 2008b). This focus of SPDA is expected to support investments in social and infrastructural areas, which are meant to fast track development in Sub-Saharan Africa (see Appendix W for sample of IDB projects in Africa).

The Saudi Arabia Information (2008) reports that the President of IDB, Dr Ahmed Mohammad Ali briefed the African Ambassadors on the role the Bank could play in implementing the NEPAD initiative within the framework of the Ouagadougou Declaration. Thus, the Bank allocated $2 billion within five years for supporting development efforts in 27 African member countries. However, the sum of $9 billion had been earlier provided to African member countries which made it possible to finance projects like roads, school classes, health centers, digging of 3700 wells and reclamation of 250,000 hectares of land. Also, the Bank joined the Global anti-poverty efforts and allocated an ambitious $10 billion to fight this devastating phenomenon in member countries. This effort was tagged "the IDB Anti- Poverty Initiative" and it will among other things address the "root cause of terrorism" by fighting poverty, illiteracy and unemployment, which hopefully will reduce social tensions and foster better relations among nations. The Bank is also in its fifth year of a $2 billion African program, which included $50 million for the reduction of prices for anti-malaria medicines.

Similarly, the Bank has equally accepted the recommendations made at its annual symposium on "Capacity Building for Promoting Trade and Investment in Africa" as noted in IDB (2008e, p. 85): (i.) enhancing its assistance for capacity building and developing innovative instruments and programs for technical assistance, taking into account the needs of African countries, particularly those related to supply-side; (ii.) helping African countries in involving their nationals living abroad in their capacity building activities and programs for promoting trade and investment; (iii.) assisting African member countries to acquire adequate skills in structured finance for trade and investment; and (iv.) enhancing its collaboration with regional and international institutions active in providing technical assistance to African countries in the areas of trade and investment. In view of this, the Bank also launched a new 5-year Special Program for the Development of Africa (SPDA), which covers the period 2008-2012 and the sum of US$4 billion has been allocated to be spent.

From Table 3.7, it is glaring that member countries of IDB from Africa have benefitted from its development assistance over the years of its operations. For instance, the five topmost beneficiaries according to the highest allocation are Morocco ($4,016.0m), Egypt ($3,236.7m), Algeria ($2,489.1m), Tunisia ($2,208.6m) and Sudan ($1,467.0m). It should however be noted that the sum total of what Bangladesh, Pakistan and Iran received from IDB as development assistance (i.e. US$20.835 billion) is almost equal the total sum of disbursed development assistance to all African member countries (i.e. US$20.849 billion)

as presented in Table 3.7. To this end, an overview of the DA of IDB to the member countries in Africa from 1976-2010 is provided below.

Table 3.7:
Cumulative Development Assistance of IDB to Member Countries in Africa from 1976-2010 (values in US$ m)

Country	Project Financing	Technical Asst.	Trade Financing	Special Asst.	Grand Total
Algeria	591.7	4.0	1887.7	5.6	2489.1
Benin	227.3	7.1	35.0	1.4	270.8
Burkina Faso	347.0	12.6	206.1	8.8	574.5
Cameroon	185.4	3.6	17.0	1.7	283.4
Chad	312.3	6.3	3.2	10.8	332.5
Comoros	11.1	4.9	7.5	1.1	24.5
Cote d'Ivoire	279.8	0.4	76.3	1.2	357.7
Djibouti	242.9	3.7	12.0	2.3	260.9
Egypt	907.8	3.9	2323.4	1.5	3236.7
Gabon	409.5	2.2	0.0	0.0	411.8
Gambia	165.2	4.5	103.0	1.8	274.6
Guinea	327.9	10.7	48.8	7.8	395.2
Guinea Bissau	2.2	3.8	15.0	1.2	22.3
Libya	386.0	3.3	299.8	3.8	692.8
Mali	446.5	12.0	199.8	16.5	674.9
Mauritania	523.4	23.0	84.5	11.1	642.0
Morocco	1619.7	5.5	2389.3	1.5	4016.0
Mozambique	126.6	2.3	15.0	2.2	146.1
Niger	271.6	14.5	138.3	12.2	436.6
Nigeria	90.5	0.3	205.0	7.9	303.7
Senegal	588.7	11.3	272.6	14.2	886.8
Sierra Leone	121.8	7.1	5.0	3.6	137.5
Somalia	24.1	4.0	46.2	13.3	87.6
Sudan	1065.8	5.4	372.4	23.5	1467.0
Togo	113.2	2.2	6.0	1.7	123.1
Tunisia	757.2	2.5	1094.9	4.2	2208.6
Uganda	69.9	4.4	13.9	4.5	92.6
Net Approval	**10,515.1**	**165**	**10,003.7**	**165.5**	**20,849.3**

Source: Extracted from IDB Annual Report (2010).

From Table 3.7, lopsidedness is observed in the administration of development assistance to the continent and requires policy adjustment on the part of IDB. This is necessary in order to allow more funds available to the continent in view of the twin challenges of MDGs and IDB 1440H Vision. Notwithstanding these observations, there is no gainsaying that IDB over the years of its existence and

operations has continued to demonstrate with great sense of concern and care. Its love for the socio-economic and political development of Africa is manifested in the numerous grants, loans and developmental programs and projects executed in the various parts of the continent in almost four decades (see Appendix W for sample of IDB projects). Nevertheless, this financial support is even most needed now that Africa is faced with the many challenges, especially the urgent need to realize the MDGs and IDB 1440H Vision, which are all meant to fast track the development process of the continent.

3.4 Foreign Aid Discourse and Some Pertinent Issues

There are numerous issues relating to aid-growth nexus debate, which are meant to enrich understanding and provide more clarity on the subject-matter. Among such issues are: schools of thoughts on aid-growth nexus, bilateral aid versus multilateral aid and fundamental principles of multilateral aid. Others include: moral hazards and the concept of aid fungibility, foreign aid as an economic and political tool and donors' conditionality with respect to aid disbursement and usage are presented and discussed in this section.

3.4.1 Schools of Thoughts on Aid-Growth Nexus Debate

Shah et al. (2005) and Dovern and Nunnenkamp (2007) noted that there are basically two camps in the aid-growth nexus discourse. The first camp is the proponents of foreign aid (i.e. the Extensionist School – ES) who believe that foreign aid is a catalyst and stimulant for the economies of LDCs. Thus, foreign aid contributes to the growth process of LDCs and developing countries; and as such, it is good for their economies. As a matter of fact the first generation works

of Chenery and Strout (1966) to Papanek (1973), Chaudhuri (1978), Levy (1987), Mosley et al. (1987) and Gyimah-Brempong (1992) are good examples of studies to be noted. Even now, the latest works of Ali and Isse (2005, 2006, 2007), Burnside and Dollar (2000), Collier and Dollar (2002), Gyimah-Brempomg and Asiedu (2008), Loxley and Sackey (2008) and a host of others, have gone ahead to further consolidate this position in their various studies.

However, the alternative view that foreign aid is of less impact on growth or even a virus to the economies of the LDCs is regarded as the opinion of Non-Extensionist School (NES). This position dates back to the works of Friedman (1958) to Griffin (1970), Bauer (1972), Ranis and Mahmood (1992), Boone (1996) and now to the contemporary works of Easterly (1998, 1999, 2003, 2005, 2006, 2007a, 2007b), Hansen and Tarp (2000, 2001) and a host of others. Nonetheless, the two schools considered foreign aid as a possible factor that is likely to shift aid-recipient countries to a significantly higher sustainable growth level if moral hazards and aid fungibility are largely minimized. Hence, it could be located that the development assistance of IDB in almost four decades of its establishment and operations lend credence to the Extensionist school of thought. This is because the operations and activities of IDB have been largely geared towards improving the economies of poor countries, especially member countries with the philosophy and believe that external resources would foster growth in poor countries like African.

3.4.2 Foreign Aid: Purpose and Motives

According to Brautigam and Knack (2004), foreign aid as an economic institution has its origin in the Marshall Plan since 1947. Hence, the huge amounts of aid and the purpose of benefitting poor nations as well as its effective usage by recipient countries have always been issues of concerns to both bilateral and multilateral donors. Theoretically therefore, the objective of foreign aid is to promote economic development in recipient countries; whereas in reality, the results of this good gesture points to varying purpose and motives. In this connection, some of the important goals of aid include: (i.) to serve as an effective tool of foreign policy; (ii.) as an economic tool; and (iii.) as commercial incentives (Raji, 2001). He argues that in the provision of aid by developed countries, the least considered motive is the development of the recipient country. This is because the political and economic interests of the donor countries are often regarded as primary while that of recipient country is secondary (e.g. the case of US and Egypt).

In line with this argument, Shah et al. (2005) observed: "Foreign aid is normally subject to certain limitations, which reflect the motives of the donors as to how much they are sincere to the development and welfare of the developing countries, or pursue their own overt and covert interests" (p. 1). Furthermore, Raji (2001) argues that the central point of focus when it comes to foreign aid/assistance by developed countries is their national interest, which could be political, economic, military or combination of all. He added that even a small part of aid provided within humanitarian framework is also not free of these motives. Harrigan and Wang (2011) also submitted that the presence of donor's economic, political and

strategic motivations and interests are possible reasons that could create distortions in the aid transfer process as well as diminishing the efficiency gains from this noble gesture to LDCs.

Notwithstanding, Riddell (2007) notes that there are six main clusters of motives that have historically continued to influence donor decisions in the administration of aid with two others recently added. These motives include: (i.) to help address emergency; (ii.) to assist recipients achieve their development (growth and poverty-reducing) goals; (iii.) to show solidarity; (iv.) to further their own national political and strategic interests; (v.) to help promote donor-country commercial interests; (vi.) due to historical ties; (vii.) Providing and strengthening of public goods and reducing ill effects of global evils; and (viii.) to promote human rights records of recipient governments. However, the extent to which the donors achieve these motives differ from donor to donor and also between different recipient countries. A good example of this is the US aid to Israel and Egypt over the years. Thus, the concept of Recipient needs (RN) and Donor interest (DI) is now being used in the literature to further establish the significance of purposes and motives of foreign aid in LDCs. Clist (2011) states that in the original framework, RN and DI were mutually exclusive because donors need to choose between increasing their own welfare or that of the recipients.

Earlier before now, Chenery and Strout (1966) opined that "this mixture of motives has led to a complex system of aid administration in all countries" (p. 726). This also explains the reasons why aid has continued to have less impact on LDCs economies over the years. And to further drive home this point, Shah

(2008) posits: “For the world’s hungry, however, the problem isn’t the stinginess of our aid” (p. 40). He added that in 1985, Secretary of State George Shultz stated flatly that “our foreign assistance programs are vital to the achievement of our foreign policy goals”. But Shultz’s statement should not be of any surprise, since the US must achieve its continuous hegemony. This is because every country’s foreign aid is a tool of foreign policy. Thus, he concluded that “Whether that aid benefits the hungry is determined by the motives and goals of that policy-by how a government defines the national interest”.

Furthermore, Alesina and Dollar (2000) and Shah (2008) argued that foreign aid could help the LDCs in providing greater investment as theoretically advanced by Chenery and Strout (1966) and this position has been empirically confirmed by Hansen and Tarp (2001) as well as Loxley and Sackey (2008). It can also assist in debt relief, promote free and fair trade, regional integration and sustainable economic growth through the development of productive strategies. Shah et al. (2005) posited that historical evidences have confirmed that in normal circumstances donor nations hardly assist other nations without expecting some corresponding benefits like economic, strategic, political and military in return. Shah (2008) states that resources given to LDCs are being returned back to developed countries through resource transfer and thus he posits: “Funds should be moving from developed countries to developing countries, but these numbers tell us the opposite is happening…..Funds that should be promoting investment and growth in developing countries, or building schools and hospitals, or

supporting other steps towards the Millennium Development Goals, are instead being transferred abroad" (p. 37).

A good example of this scenario is that in 2002, developing countries made six consecutive and perhaps the largest transfers of funds to developed countries totaling almost US$200 billion. Even though, aid amounts to US$50 to US$55 billion per year to LDCs, the sum of US$200 billion must be paid per year by the poor countries in various forms to developed countries (Shah, 2008). This underscores the fact that aid effectiveness is also undermined by the overt and covert motives of donors, especially bilateral donors like the US. It is not surprising therefore that Lancaster (1999) posits that foreign aid as a fiscal tool is certainly a double-edged sword; which could be used to make and mar the economy of recipient countries based on the purpose and motives of donors.

Considering the popular adage that "he who pays the piper dictates the tune"; it needs to be made clear therefore that the motives and purpose of donors in aid administration cannot be wished away. However, the donors need to adhere to basic best practices and ideals, which would enhance the realization of the theoretical objectives of foreign aid in LDCs. In view of this position, the submission of Easterly and Williamson (2011) on best practices to be followed by aid donors is very instructive to be noted at this juncture. These best practices according to them are measurable indicators that would allow observers to monitor donors and these would assist towards solving the problems of missing feedback and accountability. It is therefore hoped that the IDB would strive to adhere to these best practices, which are meant to promote the developmental

intention and credibility of donors. And more especially for the IDB, these best practices do not negate Islamic tenets and ideals. These five best practice dimensions are hereby presented in the diagram below.

Figure 3.3:
The Five Best Practice Dimensions
Source: Adopted from Easterly and Williamson (2011).

3.4.3 Bilateral Aid versus Multilateral Aid

In the growing literature of foreign aid, scholars and policymakers have been concerned about the various type of aid because it seems the aid-effectiveness is also a function of kinds and type. Thus, a general assumption which has received popular acceptance is that aid of different types may have different effects on growth. For instance, sectoral aid like aid allocated to education, health, agriculture and infrastructure among others are likely to have more direct impact on growth than food aid, military aid and a host of others (Loxley & Sackey, 2008; Ram, 2003). Similarly, aid types based on donors i.e. bilateral and multilateral are equally been viewed to be having varying impact on growth of

LDCs. This is because bilateral aid is aid from a developed country to needy countries, which gives the donor country the leverage to promote its economic, foreign policy interests and exercise its political hegemony. Abuzeid (2009) and Lum et al. (2009) noted that the largest bilateral aid donors, especially to Africa are basically the US, UK, France and Japan. According to Dagne (2011), US aid to Africa nearly quadrupled from US$1.2 billion in 2006 to US$6.9 billion in 2011 and US$7.7 billion has been estimated for the year 2012. Furthermore, the leading recipient countries of US aid in Africa as at 2008 are Sudan ($666.3 m), Ethiopia ($659.1m) and Kenya ($634.4 m). However, Kenya with $661.8m in 2011 top the list while Nigeria with $632.3m came second and South Africa received $571.1m. For the year 2012, Kenya has been allocated the sum of $751.4m, Nigeria is expected to receive $660.4m and Ethiopia is to be provided with the sum of $608.3m despite the fact that all these countries are among the most corrupt nations in the world as noted by Transparency International (2011).

More specifically, the case of the US aid to Egypt, France to Algeria and UK to Morocco are good points of reference. This is because the US provides one-third of its aid yearly to Israel and Egypt for strategic reasons. This view is corroborated by Minoiu and Reddy (2010): “In particular, the US pattern of aid is heavily influenced by its interests in the Middle East, with one third of it having been allocated to Egypt and Israel during the period” (p. 30). Similarly, Fleck and Kilby (2010) noted that dictatorial regimes like Suharto in Indonesia, Marcos in the Philippines and Mobutu in Zaire benefited substantially from US funding despite their widespread and high level of corruption, human right abuses and

domestic policies blunders. Above all, a recent study on the best and worst of aid agency practices by Easterly and Williamson (2011) revealed that the US fell within the bottom eight of worst aid agencies. Their submission aptly captures it better: "The US does badly because of poor performance on selectivity and ineffective channels-the foreign policy needs of the US superpower and the lobbies for particular aid channels seem to dominate the policies of American aid" (p. 1946).

On the other hand, multilateral aid involves a situation where a group of countries (like OECD, DFID, AsDB, IDB and AfDB among others) provide financial assistance to poor countries like the African countries, especially the SSA. Clist (2011) observes that multilateral agencies contributed 14 percent of all ODA commitments in 2006. However, it has been noted that aid from multilateral donors like IDB are more developmental focus than bilateral. In view of this, Dollar (2006) notes that multilateral aid is more selective than bilateral, especially in terms of tendency to good economic governance. Moreover, a study by Headey (2007) which used 56 countries spanning 1970-2001 found that multilateral aid is much less determined by strategic factors like economic and political interests as compared to bilateral aid. They concluded that multilateral aid flows were more effective than geostrategically driven bilateral aid flows, particularly during the Cold war period. To this end, IDB (2009a, 2009c) states that the development assistance of the bank is geared towards achieving the targets of the Millennium Development Goals (MDGs) and the IDB 1440H Vision. Moreover, its overriding

purpose of development assistance is to alleviate poverty and achieve comprehensive human development in especially poor member countries.

3.4.4 Fundamental Principles of Multilateral Aid

For the effectiveness and efficiency of multilateral aid, a number of principles and criteria have been identified. Such principles include: spatial or sectoral concentration of investment, partnership, coordination and integration with national plans, financial control and evaluation among others. However, Abegaz (2005) submits that a well-designed program of multilateral aid must necessarily embrace at least four fundamental principles. These four basic principles are: (i.) Partnership and Subsidiarity; (ii.) Sufficiency and Reliability; (iii.) Poverty selectivity versus Policy selectivity; and (iv.) Ideas versus money. Figure 3.4 below diagrammatically presents these four fundamental principles.

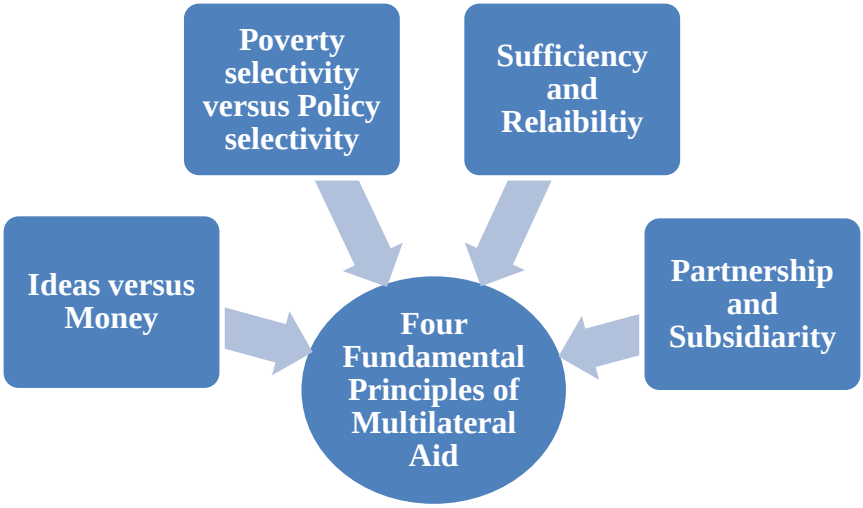

Figure 3.4:
Four Fundamental Principles of Multilateral Aid
Source: Adopted from Abegaz (2005).

i. The Principle of Partnership and Subsidiarity: This implies that sharing common goals and objectives is the most fundamental feature of partnership, which multilateral donors must take cognizance of in the allocation and administration of foreign aid in LDCs. This distinguishes it from paternalism (a characteristic of bilateral aid), which seems to consider the interests of donors as superior and primary and the needs of the recipients as secondary. Thus, multilateral donors must consider recipients countries as subsidiaries (agents) for the accomplishment of their developmental objectives in the LDCs, especially if it is true development they wish for the poor countries.

ii. Sufficiency and Reliability: Considering the enormous developmental challenges confronting Africa (like in the areas of investments in physical and human infrastructures), especially in SSA as rightly noted by Loxley and Sackey (2008), aid would have to be made sufficient and predictable (i.e. equality of commitment and disbursement). Hence, in order to stabilize public revenue, finance investments with long gestation periods and avoid welfare losses from macroeconomic fluctuations as inherent in phantom aid, the current level of aid to Africa must be fully anti-cyclical. This would allow for positive impact of aid on the economies of the recipient countries. As a matter of fact, IDB should adhere tenaciously to this principle, which is also in line with the principle of Sufficiency under the disbursement of *Zakah* to its beneficiaries because it promotes the true spirit of economic empowerment and emancipation.

iii. Poverty selectivity versus Policy selectivity: According to Abegaz (2005), eligibility to aid has two important dimensions, which are likely to create trade-offs. They are: (i.) recipient need (poverty); and (ii.) effectiveness (policy and capability), which is required to ensure that fungibility of aid would be eliminated. Therefore, considering the high level of poverty in AMCs as presented in Table 3.1, multilateral donors like IDB must be concerned about the policy environment of recipient countries. Similarly, the absorptive capacity to utilize foreign aid as noted by Hansen and Tarp (2001), especially in significantly reducing the level of poverty towards achieving the MDGs and IDB 1440H Vision, must also be given serious consideration by donors. In view of this position, Brautigam and Knack (2004) stated that, "But aid needs to be delivered more selectively and in ways that reinforce a virtuous cycle of development rather than contributing to a vicious cycle of poor governance and economic decline" (p. 256).

iv. Ideas versus Money: One of the leading explanations for the underdevelopment of LDCs is the problem of idea gap (Todaro & Smith, 2009). Therefore, since one of the ultimate goals of foreign aid is to build-up the productive capacity of LDCs, it is thus considered as more appropriate to transfer economic practices and appropriate production technology to these poor countries rather than the handouts of aid, which are highly susceptible to fungibility and moral hazards like phantom aid. Against this backdrop, there is the urgent need for multilateral donors like IDB to focus more on mobilizing traditional instruments like co-financing (such as *Mudarabah* and *Musharakah*), insurance provision, credit rating and technical assistance (to produce credible leadership),

especially for resource abundant countries like Nigeria. These viable financial instruments would promote entrepreneurship, trade integration and international creditworthiness of these countries (Abegaz, 2005).

Unfortunately, Nigeria with abundant natural and human resources as noted by Dowden (2011) is largely dominated by bad governance and corruption, which have almost become permanent features of the country and they are consequently responsible for the high level of poverty (i.e. above 70 percent according to Sanusi, 2011). Similar situations prevail in other African countries, which have continued to increase unabated due to lack of good governance ideas. These scenarios have continued to make nonsense of the foreign aid administration and the anticipated gains in these countries and make the presence of resource transfer a now common practice among bilateral donors like the US.

3.4.5 Foreign Aid as an Economic and Political Tool

Perhaps, the most notable role of foreign aid is to serve as a tool of foreign policy. However, beyond this role are the economic and political interests of the donor country or institution. USAID (2004) notes that the primary purpose of US' aid has always been to perpetuate and promote its own national interests (i.e. foreign, economic, political and security). As such, foreign aid is regarded as an important policy tool to realize these national interests, especially in LDCs and developing countries. No wonder therefore that over the years, Egypt and Israel have continued to be the major beneficiaries of US aid, especially in the mid-1990s. And as Jones et al. (2005) argued that commercial interests of donors remain an outstanding feature of contemporary foreign aid relationships.

Riddell (2007) observes that some donors often try to balance between development interest on the one hand with political, strategic and commercial interests on the other like UK, China and Japan among others. Also, foreign aid is considered as a source of revenue to the recipient government, which often augments the budget of recipient country like it does to Mozambique's yearly budget. Therefore, it can serves as a positive fiscal tool in the hand of the donor to bring about fiscal discipline and responsibility in the recipient countries and at the same time, the donor can use it to enhance her commercial interest through credit purchase, commodity transfer and a host of others. In the same vein, foreign aid can serve as a political tool to bring about political stability through good governance in the recipient countries and it could also be used by donors to further their own hegemony.

In view of this submission, Riddell (2007) opines that "…the political dimensions of aid remain central to understanding both the giving of aid and its impact at the recipient end" (p. 7). This implies that the donor can use it to advance her own interest by creating economic, political and security restrictions on the recipient country. This position concurs with Easterly (2003) and Papanek (1973) political determinant of aid observation. For instance, in recent times, countries like Afghanistan, Iran and Pakistan have received massive increase in aid because of "the war on terrorism". In the same token, Israel and Egypt have continued to be the major beneficiaries of US aid because of her special interest in the two countries, especially Israel.

However, Pramanik (2003) notes that the negative implication of the political determinant of aid when he argued that, the control over the development funds used to finance development projects, particularly education and knowledge-based technologies. These funds are often used by the developed countries to alter fundamental policy decisions and restrictions in LDCs with special reference to resource-poor Muslim countries. Good instances include the cases of Iraq, Egypt, Afghanistan and a host of others by the US government. To this end, Pramanik (2003) is of the opinion that OIC and IDB have enormous potentials to assist in bringing about economic and political prosperity in Muslim countries. This is because the development assistance of IDB is guided by the spirit and letter of the Shari'ah, which promotes welfare and security of the people and the country without the concern for any hegemonic interest in the recipient countries unlike the US and other multilateral donors like World Bank and IMF.

3.4.6 Foreign Aid and Donors' Conditionality

It is often argued that all aid donors, both official and non-governmental deserve to know and ensure that the resources they give are used for the purpose intended for; and more importantly, that the resources are judiciously utilized. This therefore informed the idea of conditionality or "strings are attached" (Shah et al., 2005, p. 5), which is seen as an instrument to promote reform in recipient countries. This idea has been widely popularized by the World Bank and IMF. The central implication of this idea is that providing aid to "non-reforming" governments often perpetuates the continuous implementation of poor and growth-retarding policies (Riddell, 2007). Thus, we have policy conditionality

(e.g. Trade Liberalization, Privatization etc.) and program conditionality like Structural Adjustment Program as measures of ensuring the judicious utilization of aid in LDCs. Bermeo (2011) notes that China places low conditionality despite the fact that Chinese aid grew rapidly in recent years from US$1.5 billion in 2003 to US$25 billion in 2007.

It needs to be understood that according to conventional wisdom: "he who pays the piper dictates the tune". As such, conditionality on the part of donors concurs with this logical reasoning that since they provide the resources to LDCs, they should necessarily provide the guidelines (like conditionality) for the usage. Notwithstanding the conditionality to be imposed by donors, the most fundamental view is that it should not be harmful to the recipients. Such conditionality should have human face i.e. growth-promoting, since foreign aid is about development and not imposing unnecessary restrictions and conditions on the recipients. This view concurs with the position of Pramanik (2003) and Riddell (2007) who argued that the appropriateness of the conditions being imposed should be meant to promote the recipient economic growth and welfare i.e. the conditions should have human face. Notwithstanding the fact that all donors have the obligations to ensure that the funds being provided are effectively and efficiently utilized for the purpose intended. Thus, conditionality has been the means by which it can be ensured and enforced, particularly policy conditionality, which tends to promote good governance.

3.4.7 Moral Hazard and the Concept of Aid Fungibility

A growing body of literature has identified that some of the reasons, which make foreign aid susceptible to ineffectiveness with respect to the economic growth of LDCs are the twin problems of moral hazard and aid fungibility. Hence, these two problems are now been considered as the drivers of vicious cycle problem, which generate pervert incentives and consequently retards growth in LDCs. Goldsmith (2001) submits that moral hazard is now been regarded as the mechanism for the supposedly perverse political impact of foreign aid in LDCs, especially in Africa. This is because aid frees those at the corridors of power from bearing the full consequences of their leadership blunders and misdeeds as exemplified in the case of Mobutu of Zaire in the 1990s. Lancaster (1999) notes that President Mobutu is certainly a case of a profoundly corrupt and incompetent regime that brought little benefits to his country from the foreign aid provided by especially the US, France and Belgium but rather utilized the opportunity to enriched himself and his cronies. Thus, aid is accused of undermining institutional capacity building in Africa.

Moral hazard also underestimates the power of ideas because it emphasizes the need for funds rather than transfer of technology and productive skills, which would have more permanent and positive impact on the economy. Other examples of moral hazard identified by Minoui and Reddy (2010) include: creating dependency mentality, worsening bureaucratic quality, crowding out private sector development and aid volatility is engendered among others. In the same vein, aid fungibility implies a situation when aid is diverted for the purpose not

meant for like foreign aid allocated for the construction of classrooms but diverted to the payment of legislators' allowances in the parliament.

In view of this, a study using panel data by Feyzioglu, Swaroop and Zhu (1998) noted the presence of aid fungibility. They argued that donors did not finance the project they approved but the one recipient government chose to undertake. In fact, Lancaster (1999) confirmed this phenomenon as also responsible for the ineffectiveness of foreign aid in Africa. He revealed that aid used in funding health, industry and agriculture were highly susceptible to fungibility while aid to energy, transport and communication sectors was partially fungible. Hence, these twin problems in aid-growth nexus is now been further discussed under the perversity thesis. In order to overcome these serious problems, IDB needs to assist in promoting the principles of multilateral aid and best practices. Also, the need to create real progressive forces to promote local ownership of reforms seems imminent if aid is to theoretically achieve the primary objective of stimulating and promoting economic development in LDCs. Similarly, a popular aid-policies-growth nexus study by Burnside and Dollar (2000) confirmed the presence of aid fungibility. Thus, they posited that their result is consistent with other evidences that aid is susceptible to fungibility and tends to increase government spending proportionately and arbitrarily, thus promoting corruption.

3.5 Islamic Perspective of Foreign Aid

The universality of Islam as a divine system underscores that Islam is a complete system of life. Hence, all facets of human endeavor attract adequate exposition and elucidation, especially the economic sphere because it facilitates a

harmonious human existence. Therefore, the Islamic economic system is based on universal values and ideals such as economic freedom, dignity of labor, justice, equality, moderation, trustworthiness, accountability, solidarity, cooperation, sharing and caring (altruism) and a host of others. Sadeq (2006) submits that the values of cooperation, sharing and caring are the essential and basic elements of the Third/Voluntary Sector (i.e. *Ijtimai* Sector) of the Islamic economic system. It is in line with these elements that the concept of foreign aid/development assistance could actually be said to evolve and revolve. No wonder therefore that these elements are the underlining functionality principles of IDB as clearly stated in IDB (2008b), which states as follows:

> The IDB's main function is to provide various forms of development assistance for poverty alleviation through human development, forging economic cooperation by promoting trade and investment among member countries, and enhancing the role of Islamic finance in the social and economic development of member countries. (p. 1)

Besides, Islam teaches that a Muslim is his brother's keeper who should share in his pains and provides for his needs. The Prophetic tradition of you are not a believer unless you love for your brother what you love for yourself, is very instructive at this juncture. In the same vein, they are expected to cooperate on benevolent activities, especially that which bring strength and collective peace, harmony, solidarity and development. The Qur'an notes this economic principle with profound emphasis and clarity: "……Help you one another in *Al-Birr* and *At-Taqwa* (virtue, righteousness, piety); but do not help one another in sin and transgression. And fear Allah. Verily, Allah is Severe in punishment" (Q5:2).

Moreover, at the macro level, this principle is also expected to regulate the affairs of the society and more importantly at the governmental level, so that a resource-rich country cares and assists resource-poor country. This could be done through transfer of resources with the underlining proviso that they shall be used for the collective benefit of all. On this principle, Pramanik (2003) notes: "the economic entity's success is manifested by implementing the idea of many individuals acting together in a creative enterprise (i.e. cooperation)". In this regard, Ibn Khaldun was quoted as saying that, "He thinks that without mutual cooperation required to satisfy complex human needs, humanity would vanish" (p. 69).

Importantly, this principle could be identified as responsible for the action of OPEC Fund for International Development, which made direct loans to about seventy-nine countries in Africa, Asia and Latin America without any negative conditionality. Arnold (1985) observed that the greater part of OPEC aid has gone to other Arab states and to Islamic countries. This is similar to majority of French aid which are expended on Francophone African countries or a majority of British aid to the Commonwealth members. He further stressed that the most important impact of OPEC aid has been in support of the budget or the balance of payments of recipient countries that are largely Muslim countries in Africa and Asia. Basically, OPEC is an oil-cartel organization made-up of 13 major oil-exporting developing countries (i.e. Algeria, Libya, Kuwait, Qatar, Ecuador, Iraq, Nigeria, Saudi Arabia, Indonesia, Gabon, Iran, United Arab Emirates and Venezuela), which works together to promote their joint national interests (Todaro & Smith, 2009).

In the same vein, the establishment of World Fund for *Zakah* by OIC is essentially to promote cooperation, solidarity and development among Muslim nations and more importantly to reinforce the concept of *Zakah* as a tool for economic development and social support. Hasan (2007) notes that the institution of Zakah is a major tool to ensure distributive justice in Islam and indeed the first system of social security in the world, which promotes mutual love, happiness, sharing, caring and cooperation between rich and the poor. Sadeq (1990) identified the principle of cooperation as significant for the economic prosperity of Muslim nations when he submits in the following words:

> If the Muslim countries co-operate with each other, which is a requirement in the Islamic code of life, they can develop themselves in socio-economic fields without going into the politico-economic and socio-cultural dominance of the non-Muslim and often anti-Islamic nations of the world. (p. 105)

Therefore, the goals stated in the above submission are actually the goals of development assistance, which international financial institutions like World Bank, IMF, OECD, AsDB, AfDB and IDB among others, should strive to accomplish. It thus implies that foreign aid or development assistance is something that is laudable and should be encouraged because it is theoretically about human *falah* (prosperity and success). This is one of the *Maqasid ash-Shari'ah* (Objectives of *Shari'ah*), especially when the aid is given without destructive strings attached. Similarly, most of the principles and best practices advocated to be followed by aid donors are in line with the Islamic ideals and teachings. No wonder, Sadeq (1990) supports the idea of development assistance but he also cautions when he argues as follows: "In considering development

finance from the non-Muslim world, they should try to avoid any interest based or tied loans. They may allow direct foreign investment, but only under favorable terms and conditions" (p. 105).

In line with the Islamic economic principle of Wide Circulation of wealth, which states that wealth and property should be circulated among the populace and actively transferred from hands to hands in the form of expenditures and investments (Securities Commission Malaysia, 2009). It implies therefore that those who have should spend on the less economically endowed. In view of this, spending in the form of investments and expenditures would activate the economy and stimulate economies for higher performance. More so, the Islamic vision of development as posited by IDB (2006a) is rooted in Religion (*Deen*), which is heavily guided by the Divine law (Shari'ah), ethics and morality (*Akhlaq*). As a matter of fact, the developmental goals of Islam are anchored in the concepts of human well-being (*Falah* and *Sa'adah*) and good life (*Hayatun Tayyibah*) in this world and the hereafter.

Basically, if the IDB could effectively and efficiently adopt this principle in conjunction with the Growth centre theory, which holds that redistribution of economic opportunities like infrastructure to less endowed areas would attract investment, thereby opening opportunities for further development of the area. Hence, the development assistance of IDB, which are largely contributions from rich member countries like Saudi Arabia, Kuwait, U.A.E., Qatar and Libya among others, would be beneficial to poor Muslim countries like Somalia. These resources should therefore be extended to less endowed countries to promote and

stimulate their economies for growth and development. However, this good gesture could only make desirable impact if judiciously administered and utilized and by so doing, it fulfills the theoretical basis and objectives of development assistance to resource-poor countries as the case with most African nations.

Furthermore, Iqbal and Tariqullah (2004) are of the opinion that from the Muslim countries' point of view, there is both a scope and a need to increase the flow of foreign aid among themselves. This is in view of the fact that there are a number of rich Muslim countries like Saudi Arabia, UAE, Brunei and a host of others, which can well afford to help their poor brothers in other countries. Hence, it would also be desirable to channel more and more aid through multilateral aid agencies like IDB to these poverty-ridden countries such as Niger, Somalia and Chad among others. Unfortunately, most Muslim nations are yet to fully realize the significant role of these lofty economic principles of cooperation, solidarity, sharing and caring could play in leading their economies to the path of development and prosperity. Adhering to these principles would definitely go a long way in enhancing and promoting the socio-economic, political and military development of the Muslim world.

It is very instructive therefore that the observation of Pramanik (2003) on the tremendous potential of OIC and IDB to bring about economic prosperity and political stability through effective and efficient administration of development aid in poor Muslim countries are noted with the seriousness it requires by the IDB. More so, the IDB is unlike other multilateral donors in view of its distinctive

philosophy, mission and vision, which are rooted in the Shari'ah. On this, the IDB (2009a) states:

> The IDB development assistance is geared to achieve targets of the Millennium Development Goals (MDGs) and the IDB 1440H Vision. In particular, the overriding purpose of development assistance is to alleviate poverty and achieve comprehensive human development. Over the past thirty-five years, the bank provided development assistance to member countries for the key sectors of their economies such as public utilities, transport and communication, social services, agriculture, industry and mining and financial services. (p. 5)

Hence, there is the urgent need on the part of IDB to scale-up aid, especially to Muslim countries in Africa based on the Shari'ah economic principles of fiscal discipline and responsibility, which prevents aid fungibilty and reduce the presence of moral hazards that often lead to corruption and underdevelopment in these countries. As such, some of the areas of aid that would have profound and significant impact on the economies of these countries should include: Program aid (i.e. SWAPs – Sector-Wide Approaches, which supports sectors like education, health, agriculture, water and budget support), technical assistance, project aid, humanitarian aid and emergency relief. Furthermore, the IDB priority areas which include: human development, agricultural development and food security, infrastructure development, intra-trade among member countries, private sector development, research and development (R&D) in Islamic economics, banking and finance (IDB, 2004) should also be intensified and promoted.

Ahmed (2009) notes that Muslim countries can solve the problem of inadequate capital resources for their development through pooling together their vast oil revenue. At the same time, the revenue could be invested in viable economic

projects to generate additional revenue for economic development of their various countries. Also, these countries could also focus on their areas of competitive advantage and avoid unhealthy competition among themselves. Doing this would assist in uplifting the quality of life of the people and also reduce the development gap among the Muslim countries. In the same vein, Sadeq (1990) as earlier made similar position when he submits in the following words: "For the Muslim countries, however, the better external source of mobilizing external resources for development is the capital-rich Muslim countries" (p. 105).

The implication of the foregoing submissions is that the development assistance of IDB to its member countries is in line with the Islamic economic development spirit and also the *Maqasid ash-Sha*ri'ah, which promotes and encourages the rich to assist the poor to live a fulfilled and prosperous life. In view of this, resources are mobilized by IDB from the rich-member countries to the less endowed countries for the purpose of economic development. Therefore, it could safely be stated that foreign aid from the Islamic perspective is a worthy and commendable development strategy in view of its theoretical basis and objectives, especially when it is Shari'ah compliant in it objectives, principles and implementation. Hence, if adequately utilize as theoretically and objectively postulated, it would definitely contribute in no small measure to the development of less developed countries, particularly in the African continent, which hosts the highest number of backward and underdeveloped countries in the world (Ahmed, 2009; IDB, 2006a).

CHAPTER FOUR

METHODOLOGY

4.0 Introduction

In this particular section, issues on methodology for the realization of the research objectives are discussed. Therefore, issues like analytical framework, model specification and identification of the parameters to be estimated are discussed. Similarly, the research methods employed for the analyses, sources of data, definition of variables as well as transformation of data are discussed.

4.1 Methodological Framework

This research seeks to study a group of countries in the African continent, which the research tagged as "African Muslim Countries-AMCs" and they are all members of IDB. It is hoped that the outcome of this study can be used to generalize for other African countries and by extension other IDB member countries. Hence, this research compared members within the group and also compared with other LDCs where and when necessary. In view of this, the diagram below presents the methodological derivation of the sample size that has been used in this study.

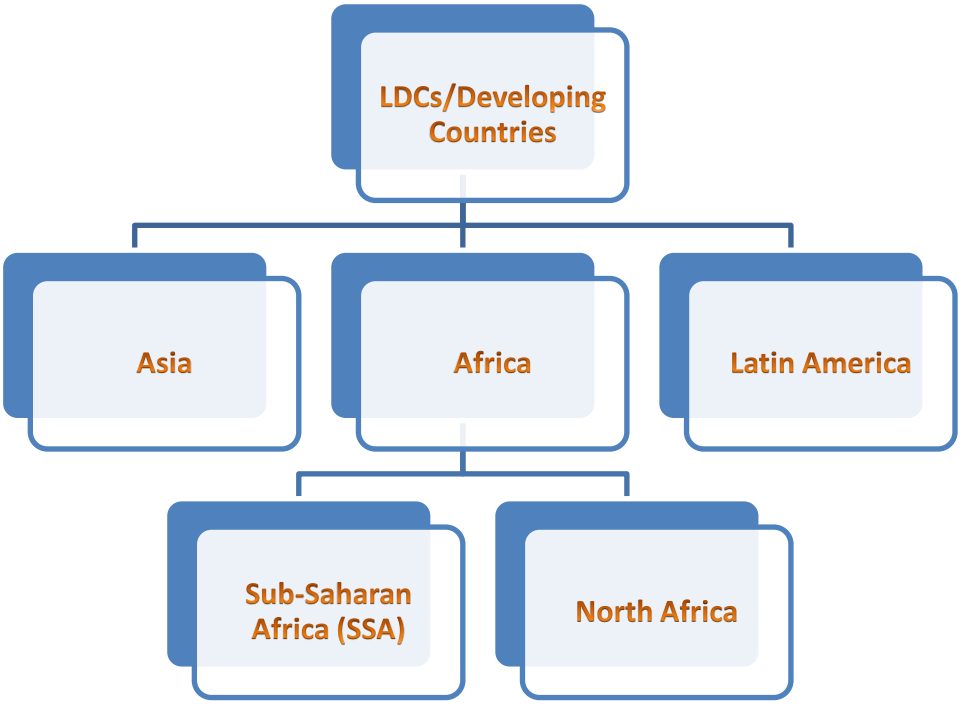

Figure 4.1:
The Methodological Derivation of the Research Sample
Source: Designed by the Researcher

Figure 4.1 shows how the sample size for this research was derived. As earlier noted, most studies on foreign aid and economic growth focus on LDCs/Developing countries and moreover, these countries are mostly from Asia, Africa and Latin America continents. Importantly, since this research is on Africa and it was observed that the studies available classified Africa into two broad regions i.e. Sub-Saharan Africa (SSA) and North or Tropical Africa (see Collier & Gunning, 1999; Loxley & Sackey, 2008; Todaro & Smith, 2009). This research therefore combined Muslim countries from these two broad regions (i.e. 14 countries from SSA and 5 countries from North Africa). This is in view of the fact that no specific study is available on these Muslim countries, most especially as it relates to foreign aid and economic growth in the African continent.

More so, these sample countries (i.e. 19) are all members of IDB whose database on foreign aid to Africa was used for this study. As a matter of fact, the choice of this sample size was based on four reasons: (i.) the sample countries meet the population parameter of 50 percent, which is also in line with USAID (2004) submission on what constitute a Muslim country; (ii.) these countries are more than two-third of the entire member countries of IDB from Africa; (iii.) majority of the African countries are the most backward and least developed countries in the world, especially the Muslim countries as posited by Ahmed (2009), Aznan (2008) and IDB (2006a); and (iv.) these countries because they are Africans, share similar demographic and economic characteristics to some extent as noted by Collier and Gunning (1999). Hence, the sample countries provide an excellent opportunity to investigate the role of IDB's foreign aid activities in accounting for growth in these selected African countries.

In order to achieve the set objectives for this study, especially the main objective, which is the impact of foreign aid activities of IDB on AMCs, an exploratory research approach was adopted. This is in view of Olakunle (2004) position who notes that exploratory research approach can be used to obtain some background information, which are vital whenever a researcher intends to break new ground. And since this study introduced a new perspective meant to explore unknown phenomenon in the role of IDB in Africa, it implies therefore that the approach is appropriate. Furthermore, the approach is good in developing understanding of the structure of beliefs and attitudes in order to facilitate the interpretation of data

structures in multivariate data analysis, more especially that SEM framework has been adopted for this study.

Furthermore, it can be used to "data dredge" or explore quantitative data to reveal hitherto unknown connections between different measured variables (e.g. the aid-human capital-growth link is not yet prominent in the foreign aid debate). By this choice, it satisfied the researcher's curiosity and desire for better understanding of the subject matter. As such Simultaneous Equations Model (SEM) was used to estimate the aid-growth, aid-human capital-growth relationship as well as the aid-investment-growth relationship. This adoption is in line with the works of Gyimah-Brempong (1992), Abiola (2003), Bushra (2005), Akpokodje and Omojimite (2008) as well as Sullivan, Tessman and Li (2011). They submitted that the best approach for understanding the interdependencies that exist among variables, which give feedback loops, is to use SEM because single equation overlooks these interdependencies.

Hence, the variables of interest/identified as the *sine qua non* and of importance to this study include: Growth-which is considered as the main variable and other endogenous variables are investment (i.e. physical capital) and human capital. The transmission mechanisms revealed that the impact of foreign aid on growth is not direct but indirect (see Figure 2.1) and it is achievable through growth variables like investment and human capital, which are expected to impact positively on growth. Gyimah-Brempong (1992) findings confirmed this position and also Gyimah-Brempong and Asiedu (2008) as well as Loxley and Sackey (2008). Thus, in our SEM specification therefore, investment and human capital are

regarded as proxy variables through which the impacts of the development assistance of IDB were measured. This position is in line with Wooldridge (2009) submission that an unobservable or key variable like foreign aid in our case could be captured in a model or equation when proxy variable is used. And by our adoption of proxy variables for foreign aid, the problem of endogeneity (i.e. omitted variable) is resolved in this study.

As a matter of fact, this study gauged the AID-Growth impact as well as the AID-Investment and AID-Human capital impacts on the economies of the base sample. In the succeeding sub-sections therefore, attempts have been made to present the analytical framework and the model specification for this study. This is to enable the study to have a sound and adequate framework for its analysis vis-à-vis the function and model adopted. In the same vein, the specification of its model is to allow for adequate representation of the variables, which are fundamental to this study, so as to preclude misspecification and measurement error, which could impact negatively on the robustness of the study.

4.1.1 Analytical Framework

It is of importance and necessity to establish an analytical framework for this study; and in line with previous studies on aid-growth nexus in Africa, an Augmented Solow Growth Model was adopted. Gyimah-Brempong (1992) posits that the use of SEM based on production function framework to investigate economic growth in LDCs is now a standard approach in development economics literature. Therefore, this study assumed that the growth rate of GDP is a function of aid, investment, human capital, initial income and poverty (see Figure 2.1).

Basically, the aid variable is considered as a latent variable, in view of the assumed indirect relationship existing between aid and growth as noted by Gyimah-Brempong (1992) as well as Loxley and Sackey (2008). This assumption emanates from the fact that in order to promote economic growth through foreign aid, government, donors and development partners' needs to give "big push" to investment as argued in the big push theory and empirically confirmed by Hansen and Tarp (2001) as well as Loxley and Sackey (2008) that investment is enhanced with the presence of foreign aid.

Thus, aid can serve the purpose of filling the gaps created as a result of low domestic savings and shortage of foreign exchange, which is the basic assumption underlining the Financial Two Gap Model. Also, the government must promote human capital as contained in the Augmented Solow Growth Model and postulated in the Convergence thesis, because human capital is a growth determinant that is too important to be ignored in the growth process (Henderson & Russell, 2005). Similarly, the recommendation made by Cheng and Zhang (2008) that future research should study the interactions among foreign aid, investment and human capital were examined and analyzed in this study. This also informed the basis for objectives 2 and 3 of this study.

In view of this submission, the dataset on aid for this study were obtained from the IDB spanning 1987 through 2010. This is dissimilar to previous studies like Gyimah-Brempong (1992), Loxley and Sackey (2008) as well as Bjerg, Bjornskov and Holm (2011) on SSA, Africa and Least Developed Countries respectively. Their studies specifically used World Bank, Organization for Economic

Cooperation and Development (OECD), Centre for Global Development and World Development Indicators databases for data on the foreign aid variable, whereas this study used IDB dataset with respect to foreign aid activities in Africa.

4.1.1.1 Hypotheses/Propositions Development

In view of the fact that our research questions are products from the problem statement highlighted in Section 1.2; and according to Joseph, Arthur, Samouel and Mike (2007), research questions are the basis for the development of hypotheses in any research undertaking. Against this background, we hereby state our hypotheses in the following terms:

H1: IDB contributes positively to the economic performance and growth process of the AMCs.

H2: The investment drive of AMCs is positively affected by the development assistance of IDB.

H3: The development assistance of IDB contributes positively to the human capital development of the AMCs.

H4: More development assistance leads to higher growth in topmost recipient countries among AMCs.

H5: The nature of causality between corruption and foreign aid in AMCs is both in the short and long-run.

4.2 Model Specification

4.2.1 Simultaneous Equations Model (SEM)

This section presents the macroeconomic model that was used to estimate the impact of aid on economic growth in African Muslim Countries. The model of this study was based on the adapted Augmented Solow Model based on Simultaneous Equations Model (SEM) using proxy variables according to Gujarati (2006) and Wooldridge (2009) to gauge the relationship between aid and growth as well as investment and human capital. This is because SEM allows for the possibility of recognizing each country's response to foreign aid which may differ from the overall response and hence, it reduces the biases imparted by the use of ordinary least square (OLS) method. In this vein, the main endogenous variable for this study is Growth (G) while the two proxy variables i.e. S_k (physical capital investment) and S_h (human capital investment) also served as endogenous-explanatory variables in the growth model, which is our base model in this study. According to Wooldridge (2009), one of the means by which an omitted variable like foreign aid as the case in our study could be captured in the model specification and analysis is through the adoption of proxy variable, which is a solution to the problem of endogeneity.

Furthermore, this study investigated the simultaneous relationship between economic growth, investment, human capital and foreign aid through the Simultaneous Equations Model (SEM) approach. This allowed the simultaneous equations framework the possibilities of uncovering the interconnections that are not revealed by the single equation method, which White (1992) identified as one

of the major problems confronting aid-growth analysis in most of the studies. The use of SEM framework for this study is consistent with similar adoption by previous studies as evidenced in the works of especially Gyimah-Brempong (1992), Abiola (2003), Akpokodje and Omojimite (2008) as well as Sullivan et al. (2011). In the same vein, the Panel data approach was adapted from Boone (1996), Irandoust and Ericsson (2005) as well as Asteriou (2009). However, the SEM approach was modified to accommodate the relevant variables identified for this study such as growth, foreign aid, investment, human capital, initial income, poverty, inflation and education.

Also, the panel estimation technique adopted for this study was in view of its advantages as noted by Greene (2007). He stated that a panel dataset possesses numerous advantages as compared to cross-sectional and time series data because it gives more informative data, more variability, less collinearity among the variables, more degrees of freedom and higher efficiency. According to Wooldridge (2009), panel datasets are fairly easy to collect, especially for states, countries etc. and policy analysis is greatly enhanced. The balanced panel data for this study was based on six years average variant from 1987-2010. Against this backdrop and especially following the general equation stated in section 2.6 above, the base equation for this study is hereby given in a specific functional linear (variables and coefficients) form. Thus, the growth equation to be estimated in the SEM framework is specify as follows:

$$G_i = \beta_1 + \beta_2 S_{ki} + \beta_3 S_{hi} + \beta_4 y_{0i} + \beta_5 POV_i + \varepsilon_i \quad \text{.....4.1}$$

Here: G is the growth rate of GDP per capita, S_k is fraction of income invested in physical capital, S_h is fraction invested in human capital, y_o stands for the initial income and POV represents Poverty. Whereas $beta_1$- $beta_5$ are coefficients to be estimated, ε is a stochastic error term. Therefore, the model of this study is based on the theoretical relationship existing among aid, investment, human capital and economic growth. Hence, the simultaneous equations function earlier stated as necessary for the estimation of economic growth, investment and human capital are hereby specified:

$$S_{ki} = \alpha_1 + \alpha_2 AID_i + \alpha_3 S_{hi} + \alpha_4 G_i + \alpha_5 INF_i + u_i \quad \text{……..…….……4.2}$$

$$S_{hi} = \gamma_1 + \gamma_2 AID_i + \gamma_3 S_{ki} + \gamma_4 G_i + \gamma_5 EDU_i + v_i \quad \text{..... ... .4.3}$$

Here, the endogenous variables are:

G= GDP per capita growth rate

S_k= Physical capital investment

S_h= Human capital investment

And exogenous/explanatory variables are:

y_o= Initial Income

AID= Development assistance from IDB

POV= Poverty

INF= Inflation

EDU= Education

μ_1 and ν_1 are the stochastic terms which satisfy the classical assumptions of error terms. However, the ln (natural logarithm) function of the three equations i.e. 4.1-4.3 are given as follow:

$$G_i = \beta_1 + \beta_2 \ln S_{ki} + \beta_3 \ln S_{hi} + \beta_4 \ln y_{0i} + \beta_5 \ln POV_i + \varepsilon_i \quad \text{.....4.4}$$

$$\ln S_{Ki} = \alpha_1 + \alpha_2 \ln AID_i + \alpha_3 \ln S_{hi} + \alpha_4 G_i + \alpha_5 \ln INF_i + u_i \quad \text{.....4.5}$$

$$\ln S_{hi} = \gamma_1 + \gamma_2 \ln AID_i + \gamma_3 \ln S_{ki} + \gamma_4 G_i + \gamma_5 \ln EDU_i + v_i \quad \text{.....4.6}$$

Here G, ln S_k and ln S_h are endogenous variables while ln y_0 , ln *POV*, ln *INF*, ln *AID* and ln *EDU* are exogenous variables; and ε, u, and v are the stochastic error terms. Therefore, equation 4.4 was used to estimate for hypothesis 1 while equations 4.5 and 4.6 were used to estimate for hypotheses 2 and 3 respectively.

4.2.2 The Twin Issues of Identification in SEM

In a SEM framework, the fundamental or key issue to be considered is identification (Wooldridge, 2009). By identification, it means whether the parameters in the equation(s) can be estimated. In view of this position, there are two criteria for determining whether or not a particular equation is identified i.e. the order and rank conditions. The order condition is in the nature of a necessary condition, while the rank condition is in the nature of a necessary and sufficient condition. Hence, the rank condition is superior to the order condition in determining whether or not a particular equation is identified, but the rank condition is quite difficult to state for a SEM involving more than two equations because it is very complex and more importantly it requires matrix algebra (Wooldridge, 2009). Notwithstanding, both conditions have been given consideration in establishing the identification for the parameters of this study.

4.2.2.1 Application of the Order Condition

The Order Condition implies that an equation in a SEM is identified if the number of excluded exogenous variables from the equation is at least as large as (i.e. ≥) the number of right-hand-side (RHS) endogenous variables in that equation (Wooldridge, 2009). Thus, we analyzed the equations in our model and the following conclusions are hereby made: Considering equation 4.4, out of the five exogenous variables in the system (i.e. ln y_0, ln *POV*, ln *INF*, ln *AID* and ln *EDU*), three of them are excluded from that equation (i.e. ln *INF*, ln *AID*, and ln *EDU*). Also, out of the three endogenous variables in the system (i.e. G, ln S_k, and ln S_h), two of them appear on the RHS of that equation (i.e. ln S_k and ln S_h). Hence, equation 4.4 passed the order condition in line with the principle of exclusion-restriction. Hence, this equation qualifies as an over-identified equation in view of the fact that the number of excluded exogenous variables are more than the included endogenous variables.

Again considering equation 4.5, out of the five exogenous variables in the system, three of them are excluded from that equation (i.e. ln y_0, ln *POV*, and ln *EDU*); and out of the three endogenous variables in the system, two of them appear on the RHS of that equation (i.e. G and ln S_h). Hence, equation 4.5 passed the order condition as well similar to the outcome of equation 4.4 above. In the same vein, if we consider equation 4.6, out of the five exogenous variables in the system, three of them are excluded from that equation (i.e. ln y_0, ln *INF*, and ln *POV*). Also, out of three endogenous variables in the system, two of them appear on the RHS of that equation (i.e. G and ln S_k). Hence, equation 4.6 also passed the order

condition. Therefore, in view of the foregoing submissions, it is established that all the parameters in the SEM framework passed the order condition of identification. According to Wooldridge (2009) when the number of excluded exogenous variables are more than the number of included endogenous variables, such equations are regarded as over-identification. In view of the foregoing analysis, it is hereby concluded that the equations in our model are over-identified and hence, the parameters in the model are fit for estimation according to the order condition of identifiability. However, we proceed to the analysis of rank condition, which is regarded as both necessary and sufficient condition in any SEM framework.

4.2.2.2 Application of the Rank Condition

The rank order condition in SEM analysis states that an equation is identified if and only if at least one nonzero determinant of order (M-1) (M-1) can be constructed from the coefficients of all variables excluded from that equation but included in the other equations of the model (Wooldridge, 2009). This condition is therefore regarded as the necessary and sufficient condition upon which basis identifiabiltiy of the SEM system for estimation could be confirmed as adequate and appropriate. However, he noted that analyzing for rank condition for a-three equation SEM could be difficult and complex and more particularly, it requires matrix algebra. It was not surprising therefore that virtually all the articles reviewed on SEM (like Abiola, 2003; Lan, 2006; Haque & Kneller, 2007; Akpokodje & Omojimite, 2008; Sullivan et al., 2011 and a host of others) did not report their results on rank condition or worst still on identification at all.

Notwithstanding, this difficulty and complexity; and more especially considering the significance of the rank condition for a study of this magnitude, we hereby present the rank condition analysis. Considering our SEM framework with triangular simultaneous equations, we hereby present the entire model as follows:

$$G_i = \beta_1 + \beta_2 \ln S_{ki} + \beta_3 \ln S_{hi} + \beta_4 \ln y_{0i} + \beta_5 \ln POV_i + \varepsilon_i \quad \text{.....4.7}$$

$$\ln S_{Ki} = \alpha_1 + \alpha_2 \ln AID_i + \alpha_3 \ln S_{hi} + \alpha_4 G_i + \alpha_5 \ln INF_i + u_i \quad \text{.....4.8}$$

$$\ln S_{hi} = \gamma_1 + \gamma_2 \ln AID_i + \gamma_3 \ln S_{ki} + \gamma_4 G_i + \gamma_5 \ln EDU_i + v_i \quad \text{.....4.9}$$

We now transform our model to ordinary equation format and thus, the following equations emerged from our three system equations.

$$Y_{1i} = \beta_{10} + \beta_{12} Y_{2i} + \beta_{13} Y_{3i} + \gamma_{12} X_{2i} + \gamma_{13} X_{3i} + u_{1i} \quad \text{.....4.10}$$

$$Y_{2i} = \beta_{20} + \beta_{21} Y_{1i} + \beta_{23} Y_{3i} + \gamma_{21} X_{1i} + \gamma_{24} X_{4i} + u_{2i} \quad \text{.....4.11}$$

$$Y_{3i} = \beta_{30} + \beta_{31} Y_{1i} + \beta_{32} Y_{2i} + \gamma_{31} X_{1i} + \gamma_{35} X_{5i} + u_{3i} \quad \text{.....4.12}$$

Here $Y_1 \equiv G$, $Y_2 \equiv \ln S_k$, $Y_3 \equiv \ln S_h$, $X_1 \equiv \ln AID$, $X_2 \equiv \ln y_0$, $X_3 \equiv \ln POV$, $X_4 \equiv \ln INF$ and $X_5 \equiv \ln EDU$ (other notations are standard).

$$Y_{1i} - \beta_{10} - \beta_{12} Y_{2i} - \beta_{13} Y_{3i} - \gamma_{12} X_{2i} - \gamma_{13} X_{3i} = u_{1i} \quad \text{.....4.13}$$

$$Y_{2i} - \beta_{20} - \beta_{21} Y_{1i} - \beta_{23} Y_{3i} - \gamma_{21} X_{1i} - \gamma_{24} X_{4i} = u_{2i} \quad \text{.....4.14}$$

$$Y_{3i} - \beta_{30} - \beta_{31} Y_{1i} - \beta_{32} Y_{2i} - \gamma_{31} X_{1i} - \gamma_{35} X_{5i} = u_{3i} \quad \text{.....4.15}$$

We hereby rearrange the terms in each of the above equations in the following order: constant, Y_{1i}, Y_{2i}, Y_{3i}, X_{1i}, X_{2i}, X_{3i}, $X_{4i,}$ and X_{5i}. Hence, we have the following equations:

$$-\beta_{10} + Y_{1i} - \beta_{12}Y_{2i} - \beta_{13}Y_{3i} - \gamma_{12}X_{2i} - \gamma_{13}X_{3i} = u_{1i} \quad \text{.....4.16}$$

$$-\beta_{20} - \beta_{21}Y_{1i} + Y_{2i} - \beta_{23}Y_{3i} - \gamma_{21}X_{1i} - \gamma_{24}X_{4i} = u_{2i} \quad \text{.....4.17}$$

$$-\beta_{30} - \beta_{31}Y_{1i} - \beta_{32}Y_{2i} + Y_{3i} - \gamma_{31}X_{1i} - \gamma_{35}X_{5i} = u_{3i} \quad \text{.....4.18}$$

There is the need to convert the above equations into the matrix format. For brevity, this study focused on the 3×9 matrix of coefficients only:

$$\begin{array}{c} \begin{array}{ccccccccc} 1 & Y_1 & Y_2 & Y_3 & X_1 & X_2 & X_3 & X_4 & X_5 \end{array} \\ \left[\begin{array}{ccccccccc} -\beta_{10} & 1 & -\beta_{12} & -\beta_{13} & 0 & -\gamma_{12} & -\gamma_{13} & 0 & 0 \\ -\beta_{20} & -\beta_{21} & 1 & -\beta_{23} & -\gamma_{21} & 0 & 0 & -\gamma_{24} & 0 \\ -\beta_{30} & -\beta_{31} & -\beta_{32} & 1 & -\gamma_{31} & 0 & 0 & 0 & -\gamma_{35} \end{array}\right] \end{array}$$

Now we consider Eq. 4.10 for the rank condition analysis, which requires that we must obtain at least one nonzero 2×2 determinant from the coefficients of the variables excluded from Eq. 4.10 but included in other equations; i.e. X_1, X_4 and X_5 (as indicated by 0's in the first row of the 3×9 matrix of coefficients). To obtain the determinant, there are a few steps involved. First, we obtain the relevant matrix of coefficients of variables X_1, X_4 and X_5 included in the other equations. Mechanically, this is done by retaining the columns corresponding to X_1, X_4 and X_5 only and deleting the first row. Doing so results in exactly one 2×3 matrix, which we will call E and its associated determinant. However, in order to derive determinant of at least a nonzero of 2x2 matrix from 2x3 matrix, we need to construct it. Hence, we arrived at the following sets of 2x2 matrices:

$$E = \begin{bmatrix} -\gamma_{21} & -\gamma_{24} & 0 \\ -\gamma_{31} & 0 & -\gamma_{35} \end{bmatrix}$$

$$|E_1| = \begin{vmatrix} -\gamma_{21} & -\gamma_{24} \\ -\gamma_{31} & 0 \end{vmatrix} = -\gamma_{24}\gamma_{31} \neq 0$$

$$|E_2| = \begin{vmatrix} -\gamma_{24} & 0 \\ 0 & -\gamma_{35} \end{vmatrix} = \gamma_{24}\gamma_{35} \neq 0$$

$$|E_3| = \begin{vmatrix} -\gamma_{21} & 0 \\ -\gamma_{31} & -\gamma_{35} \end{vmatrix} = \gamma_{21}\gamma_{35} \neq 0$$

In view of the above results for matrix E, we conclude that Eq. 4.10 satisfies the rank condition because all the determinants resulted in nonzero outcome.

Now we consider Eq. 4.11 for the rank condition analysis as well and it implies that we must obtain at least one nonzero 2×2 determinant from the coefficients of the variables excluded from Eq. 4.11 but included in other equations; i.e. X_2, X_3 and X_5 (as indicated by 0's in the second row of the 3×9 matrix of coefficients). As before, we first obtain the relevant matrix of coefficients of variables X_2, X_3 and X_5 included in the other equations. Mechanically, this is done by retaining the columns corresponding to X_2, X_3 and X_5 only and deleting the second row. Doing so results in exactly one 2×3 matrix, which we refer to as F and its associated determinant. However, we must construct 2x2 matrices from the 2x3 matrix in

order to derive our determinant of at least a nonzero and hence, we arrived at the following:

$$F = \begin{bmatrix} -\gamma_{12} & -\gamma_{13} & 0 \\ 0 & 0 & -\gamma_{35} \end{bmatrix}$$

$$|F_1| = \begin{vmatrix} -\gamma_{12} & -\gamma_{13} \\ 0 & 0 \end{vmatrix} = 0$$

$$|F_2| = \begin{vmatrix} -\gamma_{13} & 0 \\ 0 & -\gamma_{35} \end{vmatrix} = \gamma_{13}\gamma_{35} \neq 0$$

$$|F_3| = \begin{vmatrix} -\gamma_{12} & 0 \\ 0 & -\gamma_{35} \end{vmatrix} = \gamma_{12}\gamma_{35} \neq 0$$

Similarly, in view of the result obtained from matrix F, we conclude that Eq. 4.11 also satisfies the rank condition because two of our determinants resulted in nonzero outcome.

Finally, we consider Eq. 4.12 to verify for the satisfaction of the rank condition and this requires that we must obtain at least one nonzero 2×2 determinant from the coefficients of the variables excluded from Eq. 4.12 but included in other equations; i.e. X_2, X_3 and X_4 (as indicated by 0's in the third row of the 3×9 matrix of coefficients). As before, we first obtain the relevant matrix of coefficients of variables X_2 and X_3 included in the other equations. Mechanically, this is done by retaining the columns corresponding to X_2, X_3 and X_4 only and deleting the third

row. Doing so results in exactly one 2×3 matrix, which we denote as G and its associated determinant. However, similar procedure must be followed as done to matrix F in order to arrive at least a nonzero outcome among the 2x2.

$$G = \begin{bmatrix} -\gamma_{12} & -\gamma_{13} & 0 \\ 0 & 0 & -\gamma_{24} \end{bmatrix}$$

$$|G_1| = \begin{vmatrix} -\gamma_{21} & -\gamma_{13} \\ 0 & 0 \end{vmatrix} = 0$$

$$|G_2| = \begin{vmatrix} -\gamma_{13} & 0 \\ 0 & -\gamma_{24} \end{vmatrix} = \gamma_{13}\gamma_{24} \neq 0$$

$$|G_3| = \begin{vmatrix} -\gamma_{21} & 0 \\ 0 & -\gamma_{24} \end{vmatrix} = \gamma_{21}\gamma_{24} \neq 0$$

Sequel to the result obtained from matrix G above, we also conclude that Eq. 4.11 satisfies the rank condition since two of the determinants for our constructed 2x2 resulted in nonzero outcome.

From the foregoing analyses of the rank condition we conducted, it is clear that all the three equations in our SEM framework fulfilled the rank condition of identifiability. In view of these satisfactory results for all the equations, we hereby state that all the parameters in our SEM framework have satisfied the necessary condition of order identification and also, the necessary and sufficient conditions

of rank identification. In view of these impressive results, we therefore conclude that our SEM system is fit for estimation.

4.3 Research Methods

4.3.1 Descriptive Analysis

Conventional economic wisdom requires that a research of this magnitude and significance should be preceded by some level of descriptive analysis as stimulant to the econometric techniques to be employed in the study for more elaborate and concrete analysis. In view of this therefore, the study presents the testing for normality and reliability of the data as well as correlation coefficients, in order to determine the dimension of key variables. According to Bai and Ng (2005), normality tests are useful in many areas of forecasting and econometric inference and they could help to answer questions of substantive interests such as the reliability and power of statistical analyses.

4.3.2 Panel Data Approach

Considering the various observations made by different scholars and writers as noted above on the inconclusiveness of the results on the aid-growth nexus debates; yet, they were quick to note that these scenarios emanated as a result of the methodology adopted by various studies such as the model specifications and the choice of variables. Hence, this study carefully selects its methodology in order to enhance its robustness and findings. As such, panel study approach was adopted in view of its general recommendation from previous studies as a major way of solving some problems like heterogeneity, outliers, model uncertainty, business cycle and endogeneity. Moreover, Wooldridge (2009) states that, "SEM

applications with panel data are very powerful, as they allow us to control for unobserved heterogeneity while dealing with simultaneity" (p. 567). All these highlighted methodological lacunas are potential interferences in arriving at a robust study on aid-growth nexus. Therefore, the six years average panel method adopted in this study was also a move at eliminating some of the highlighted methodological problems. The panel method variant of six years average take a clue from Boone (1996) and Svensson (1999) who used ten years average in their studies on foreign aid and growth. More especially, Boone (1996) made a combination of both five and 10 years average.

4.3.3 SEM Approach

In view of the fact that the variables of interest in this study are AID-Growth, AID-Investment and AID-Human capital relationships; it is important to state that literatures on aid-growth nexus suggest that the best model to estimates these relationships is Simultaneous Equations Model (SEM). This is in line with Abiola (2003), Akpokodje and Omojimite (2008), Sullivan et al. (2011) and particularly in response to the recommendation of Gyimah-Brempong (1992).They noted that SEM system provides the best approach for understanding the interdependencies, which exist among variables because it gives feedback loops. As such, SEM approach best presents these important relationships. Gyimah-Brempong (1992) further buttresses this point in the following words:

> …..it is necessary to investigate the possibility of simultaneity between economic growth rate and other explanatory variables. Even if simultaneous equation bias is absent, multiple equation models can better identify conduits through which aid affects growth rate and hence are preferable to single equation models for the purposes of policy formulation and implementation. (p. 2)

As a matter of fact, in the SEM specification adopted in this study, investment (i.e. physical capital) and human capital are regarded as proxy variables through which the impacts of the DA of IDB were measured. In order to have robust estimates and reliable findings, three methods of estimations were utilized i.e. 3SLS, OLS and SURE. This adoption of three methods is consistent with similar approach by Holzner (2010) who used GLS, 2SLS and SURE techniques for estimating her SEM framework. Also, Lan (2006) utilized three methods of estimation (i.e. 2SLS, 3SLS and GMM) for his SEM framework. Importantly therefore, the SURE method for the estimation of SEM was recommended and first applied by Zellner and Theil (1962), which was equally noted in Zellner (2006). Other studies which utilized SURE method for the estimation of SEM framework include: AlDakhil (1998), Lundberg and Squire (2003) as well as Arazmuradov (2011).

In fact, Zellner (2006) and Arazmuradov (2011) observed that SURE technique guarantees improved hypothesis tests regarding regression coefficients and the values of other parameters in the SEM equations. As a matter of fact, this study gauged the AID-Growth impact as well as the AID-Investment and AID-Human capital impacts on the economies of the base sample. Therefore, the SEM approach using 3SLS, OLS and SURE methods were utilized in estimating for

hypotheses 1-3 and their results were later compared. Importantly, Gujarati and Porter (2009) recommended the need to compare the results of an applied OLS on SEM with other methods for the purpose of clarity to ascertain whether OLS was appropriate or not. However, we adopted 3SLS for the estimation of SEM because it is the most popular method for the estimation of SEM as noted by AlDakhil (1998) as well as Gujarati and Porter (2009).

Furthermore, in order to achieve objective 4 of this study, we utilized a reduced-form equation of the SEM model to estimate for hypothesis 4 with the inclusion of dummy variable to account for topmost and least recipient countries. The dummy for topmost countries equal 1 while least recipient countries were assigned 0. This adoption of a reduced-form equation is in line with the position of Boone (1996) and according to Gujarati and Porter (2009), such equation could be estimated with OLS method. Against this background, we therefore specify the equations for Growth and Investment as follows:

$$G_i = \beta_0 + \beta_1 \ln AID_i + \beta_2 dummy_i + \varepsilon_i \quad \text{.....4.19}$$

$$\ln S_{k_i} = \beta_0 + \beta_1 \ln AID_i + \beta_2 dummy_i + \varepsilon_i \quad \text{.....4.20}$$

4.3.4 Times Series Data using ARDL Approach

For the purpose of estimating for hypothesis 5 in this study, we adopted the Autoregressive Distributed Lag (ARDL) model to determine the causality and long-run relationship flowing from corruption to foreign aid and vice-versa in AMCs. The range of the data for corruption variable, which were only available for 13 years reduced the scope of the coverage from our base period of 1987-2010. Hence, the data for other variables alongside the data for corruption were

disaggregated into quarterly data using Gandolfo (1981) procedure. As a matter of fact, Cointegration and Granger-causality tests were carried out on these quarterly data from 1997Q1-2009Q4. The use of time series data for the estimation of ARDL model is the conventional rule as stated in Kouakou (2011) and utilized by various studies like Anoruo and Braha (2005) as well as Fukuda and Dahalan (2011). To this end, the following basic economic model has been adapted from Fukuda and Dahalan (2011):

COR_i = f(AID, EG, INF)……4.21

AID_i = f(COR, EG, INF)……4.22

EG_i = f(COR, AID, INF)……4.23

From the foregoing basic equations, we formulated the model specification to be used for estimation. This is in line with the model specification of Anoruo and Braha (2005) for their study on corruption and economic growth in Africa. In this connection, the econometric model specification is hereby given as follows:

$$AID_i = \alpha_0 + \alpha_{11} COR_i + \alpha_{12} EG_i + \alpha_{13} INF_i + u_i \quad \text{....4.24}$$

$$COR_i = \alpha_0 + \alpha_{21} AID_i + \alpha_{22} EG_i + \alpha_{23} INF_i + u_i \quad \text{....4.25}$$

Here: EG represents economic growth proxy measured by GDP per capita growth, COR stands for corruption (proxy for Corruption Perceptions Index-CPI), AID connotes foreign aid (proxy for the DA of IDB) and INF means inflation rate, which indicator is consumer prices index. The u represents the error terms and the parameters for the model include: $\alpha_{11}, \alpha_{12} - \alpha_{23}$. In view of the above equation, our long-run corruption-aid model is hereby specified as follows:

$$\ln(AID)_t = \alpha_1 + \ln(COR)_t + (EG)_t + \ln(INF)_t + \varepsilon_t \text{.....} 4.26$$

$$\ln(COR)_t = \alpha_1 + \ln(AID)_t + (EG)_t + \ln(INF)_t + \varepsilon_t \text{.....} 4.27$$

It must be noted that all the variables with the exception of growth are in natural logarithm. Procedurally, the estimation of our long-run model is not possible unless the existence of cointegration among the variables is ascertained through the use of bounds testing technique advanced by Pesaran and Pesaran (1997). In other to achieve this objective, we hereby specified the following generic form equation in which each variable comes in turn as dependent variable.

$$\begin{aligned}\Delta \ln(AID)_{t-1} = \alpha_0 &+ \sum_{i=1}^{p} \alpha_{1i}\ \Delta \ln(\mathrm{AID})_{t-1} + \sum_{i=0}^{p} \alpha_{2i} \Delta \ln(COR)_{t-1} \\ &+ \sum_{i=0}^{p} \alpha_{3i} \Delta(\mathrm{EG})_{t-1} + \sum_{i=0}^{p} \alpha_{4i} \Delta \ln(INF)_{t-1} \\ &+ \delta_1 \ln(AID)_{t-1} + \delta_2 \ln(COR)_{t-1} + \delta_3 (EG)_{t-1} \\ &+ \delta_4 \ln(INF)_{t-1} + \nu_t \text{.....} 4.28\end{aligned}$$

Here Δ means first-difference operator and *p* connotes the optimal lag length. Hence, in line with the ARDL procedures, the determination of the presence of long-run relationship among the variables as specified in 4.26 and 4.27 is an important procedure that must be done. The procedure is based on F-test with a non-standard distribution and with two sets of critical values; and in view of this, a joint significance test of no cointegration was conducted (i.e. H_0:δ_1=δ_2=δ_3=δ_4=0). In line with Pesaran and Pesaran (1997), two bands of critical values were calculated for a given significance level. This implies that a lower band assumes that all variables are 1(0) while 1(1) is assumed for an upper band. Therefore, if the calculated F-statistic lies above the upper level of the band, it

connotes the presence of cointegration and thus, the null hypothesis is rejected. On the other hand, if the F-statistic lies below the lower level band, it implies no cointegration, which is always the null hypothesis for cointegration. Also, when the F-statistic falls within the two bands of the critical values, then we conclude that inconclusiveness exists. Importantly therefore, in order to conduct the Granger-causality test, which is the main test for the determination of the short and long-run relationship among the variables, we specified the following equation for its estimation. It is a composite of short-run and error correction estimates (i.e. ECT-error correction term).

$$\Delta \ln(AID)_{t-1} = \alpha_0 + \sum_{i=1}^{p} \alpha_{1i} \ \Delta \ln(\mathrm{AID})_{t-1} + \sum_{i=0}^{p} \alpha_{2i} \Delta \ln(COR)_{t-1} + \sum_{i=0}^{p} \alpha_{3i} \Delta(\mathrm{EG})_{t-1} + \sum_{i=0}^{p} \alpha_{4i} \Delta \ln(INF)_{t-1} + \lambda ECT_{t-1} \quad \text{.....4.29}$$

$$\Delta \ln(COR)_{t-1} = \alpha_0 + \sum_{i=1}^{p} \alpha_{1i} \ \Delta \ln(\mathrm{COR})_{t-1} + \sum_{i=0}^{p} \alpha_{2i} \Delta \ln(AID)_{t-1} + \sum_{i=0}^{p} \alpha_{3i} \Delta(\mathrm{EG})_{t-1} + \sum_{i=0}^{p} \alpha_{4i} \Delta \ln(INF)_{t-1} + \lambda ECT_{t-1} \quad \text{.....4.30}$$

Here λ represents the speed of adjustment parameter while ECT implies the obtained residuals from the cointegration model estimated in 4.28. Hence, when the cointegration of the variables is confirmed, we then proceeded to investigate the causality direction using the ECM (Error Correction Model) framework. The ECT_{t-1} implies the lagged error correction term derived from the long-run cointegraion relationship. This is because an ECM enables one to distinguish between the long and short-run Granger-causality. In view of this, the short term dynamics are established through the individual coefficients of the lagged term.

Therefore, the statistical significance of the coefficients of individual explanatory variable is utilized to determine the short-run Granger-causality while the significance of the coefficient of ECT_{t-1} provides information for the long-run.

4.4 Sources of Data and Definition of Variables

4.4.1 Sources of Data

In this study, the sources of data on foreign aid are basically from the IDB through its annual reports. Since, this study seeks to primarily assess the impact of the DA of IDB on the economies of AMCs; it is therefore natural that the bulk of data on foreign aid should largely be generated from its activities and database. Also, supplementary data for other variables were collected from the World Bank and IMF databases. Additional data were equally sourced from the Central Bank of Nigeria Statistical Bulletin and AfDB database. Hence, Table 4.1 presents summary information on the variables and the sources of data.

Table 4.1:
Definition of Variables and Sources of Data

S/N	Variable	Indicator	Type of Variable	Source
1.	Growth	GDP per capita growth (annual %)	Endogenous (Main regressand)	World Bank & IMF
2.	Investment	Gross fixed capital formation (% of GDP)	Endogenous	World Bank, IMF & CBN
3.	Human Capital	Mortality rate, infant (per 1000 live births)	Endogenous	World Bank & IMF
4.	Initial Income	GDP per capita (First year of every average period)	Explanatory	World Bank & IMF
5.	Corruption	Corruption Perceptions Index	Exogenous	Transparency International
6.	Education	Primary school enrolment, (% gross)	Explanatory	World Bank & IMF
7.	AID	The four major categorization of DA in IDB	Exogenous	IDB
8.	Inflation	Inflation, consumer prices index (annual %)	Exogenous	World Bank & IMF
9.	Poverty	GDP per capita	Explanatory	World Bank, IMF & AfDB

Source: Compiled by the Researcher.

Importantly, Olakunle (2004) and Olorunfemi and Jimoh (2005) noted that it is a general belief and understanding that data from these aforementioned institutions would carry more weight and would provide more useful information.

4.4.2 Definition of Variables

This section presents definitions for the various variables utilized in this study, especially the variables of primary interest like Growth, Investment, Human capital and Foreign aid. Other variables that served as exogenous or control variables include initial income, poverty, education, inflation and corruption. However, it needs to be stated that all the variables adopted are in line with the standard variables popular in the aid-growth nexus literature. Also, most of the empirical studies on growth include one or more of these conditioning variables.

4.4.2.1 Economic Growth

Growth in this study is defined as per capita real GDP growth. This is line with the definitions of Burnside and Dollar (2000) and Salisu (2007) of this variable in their studies on the aid-policy-growth nexus and also Kabir Hassan et al. (2011) adopted similar definition for this variable. Hence, Growth represents the major variable of interest in this study and more particularly in the SEM framework.

4.4.2.2 Investment

Investment as a variable of interest in this study refers to physical capital investment, which indicator is gross capital formation as a percentage of GDP. This is contained in World Bank (2010) - World Development Indicators dataset. This variable is an endogenous variable as well as a proxy variable representing

foreign aid (i.e. the DA of IDB). This is in consonance with our theoretical framework earlier presented in Figure 2.1 and the submission of Wooldridge (2009) that an omission of a key/unobservable variable like foreign aid as the case in our study could be captured in analysis with the use of a proxy variable. According to Gyimah-Brempong (1992) and Hansen and Tarp (2001), they noted that investment and human capital are both transmission mechanisms/channels through which the impacts of foreign aid on growth could be measured/identified. Similar opinion was also expressed and confirmed in Loxley and Sackey (2008).

4.4.2.3 Human Capital

In this study, the human capital variable is also a proxy variable like investment defined above. Its indicator is infant mortality as against the popular conventional indicator of school enrolment rate. This has been done in view of the identified African peculiarities, which denotes that enrolment does not actually imply completion or accomplishment considering the rate of dropouts in Africa as noted by World Bank (2010). More importantly, health issues within the African context are more imperative and fundamental than education because the life expectancy is actually falling. This is in view of the high rate of HIV or AIDS prevalent in Africa as observed by Agubuzu (2004), Kaiser (2008) and Huang et al. (2010), which is seriously threatening the workforce and human capital development in the continent. In fact, McGillivray et al. (2011) in their findings about the impacts of aid on well-being in developing countries noted that higher mortality rate is associated with lower wealth and education and that higher fertility is associated with higher mortality, especially for African countries. Empirical findings have

equally shown that healthier countries grow better and faster than countries with poor health as the case with most African countries (Huang, 2010). Therefore, scholars like Boone (1996) and Siddiqui (2009) consider infant mortality rate as the best indicator for human capital. In the same vein, Gillanders (2010) regards this indicator as an ideologically clean indicator for HD. Therefore, the human capital variable in this study is measured by the rate of infant mortality.

4.4.2.4 Initial Income

Initial income is regarded as an exogenous variable in this study and it is represented by initial real per capita GDP. This variable is often included in growth model, according to Ali and Isse (2005) to verify the convergence hypothesis, which is premised on the neoclassical growth theory that countries are similar except for their starting GDP level. As a matter of fact, poor countries like the African are predicted to grow faster than rich countries. This measurement indicator is consistent with the definitions of Papanek (1973), Burnside and Dollar (2000), Ali and Isse (2005) and Minoiu and Reddy (2010) in their studies on aid-growth nexus. We therefore expect a negative sign from the coefficient of this variable because it is a theoretical requirement to satisfy the convergence thesis.

4.4.2.5 Corruption

The socio-economic and political devastating implications of this phenomenon, especially in the African countries as noted by Werlin (2005) and Collier (2006) prompted them to describe the continent as being caught in a “Corruption trap”. The severity and damning consequences of this variable was further revealed in the 2010 and 2011 Corruption Perceptions Index rating of African countries

where all AMCs scores were below 5 (see Table 3.2). Hence, this study considers corruption as endogenous explanatory variable in the corruption model. The essence of this model is to gauge the empirical impacts of corruption on foreign aid and vice-versa in AMCs (i.e. hypothesis 5). Therefore, the proxy for corruption is the Corruption Perceptions Index, which Aliyu and Elijah (2008) as well as Anoruo and Braha (2005) utilized in their studies on corruption and economic growth in Nigeria and Africa respectively.

4.4.2.6 Foreign Aid

The foreign aid variable is a latent/key variable in this study and thus, it is represented by investment and human capital variables, which are regarded as proxy variables in our growth equation in the SEM framework. This adoption is in line with our theoretical framework, which defined the impacts of foreign aid on growth as indirect (see Figure 2.1). Therefore, using both variables as stated above is consistent with the definitions and findings of Gyimah-Brempong (1992) and Loxley and Sackey (2008) in their studies on aid-growth nexus in Africa. Their findings revealed that the transmission mechanisms through which the impacts of foreign aid could be gauged are these two important economic variables. Therefore, the primary indicator for foreign aid in this study is the DA of IDB (see Figure 1.2).

4.4.2.7 Education

This variable is considered as an explanatory and control variable for human capital. This variable is measured by primary school enrolment rate, which is consistent with Ali and Isse (2005) definition of this variable in their studies on

aid-growth nexus. Importantly, Gujarati (2006) states that socio-economic theory suggests that personal income and female literacy rate are primary factors affecting infant mortality and both of these factors are largely determined by the level of education of the individuals. Hence, education as a control variable for infant mortality is considered as appropriate.

4.4.2.8 Inflation

Inflation is treated as a control variable in this study in line with Roodman (2007), Alvi et al. (2008) and Loxley and Sackey (2008). Although, Burnside and Dollar (2000) did same but it served as an indicator for the fiscal policy component of the policy variable introduced in their study. It is believed that high rate of Inflation in an economy especially that of African countries implies bad policy and poor governance, which has almost become permanent characteristics of most countries in Africa. Hence, inflation rate is therefore measured by consumer prices index, which is consistent with Alvi et al. (2008) and Loxley and Sackey (2008) definition of the same variable in their studies.

4.4.2.9 Poverty

Poverty is an important determinant of growth especially for African countries where high level of poverty prevails. No wonder, it attracts the attention of donors to serve as one of the major motivation for the giving of aid (Asiedu, Jin & Nandwa, 2009; Clist, 2011). Therefore, poverty is serving as an explanatory variable for growth in this study. The conventional indicator for poverty is usually the poverty headcount but due to paucity of data, Clist (2011) adopted the GDP per capita for his study and he regarded it as the most sensible option in the

absence of headcount data. In similar direction, Asiedu et al. (2009) adopted GDP per capita as the indicator for poverty and one of the reasons advanced was that this indicator is strongly correlated with most poverty indicators and as such this indicator could be considered as a broad measure of poverty in recipient countries. In view of these opinions and particularly following the paucity of data suffered by this study on the same variable, we also adopted GDP per capita as the indicator for poverty.

4.5 Sample Size and the Problem of Missing Data

For a research of this magnitude and importance to have robust analysis and reliable findings, serious attention must be given to the issues of sample size and missing data. Therefore, this section presents the manners and ways these two fundamental research issues have been handled. According to Hair et al. (2006), missing data connotes a situation where valid values for one or more variables are not available for data analysis, especially in a multivariate analysis. Hence, Wooldridge (2009) regards a situation of this nature as a measurement error problem, which is going to impact negatively on the data analysis. Moreover, a study that utilizes secondary data is definitely going to encounter this problem. Therefore, handling missing data problem with utmost care and seriousness has become very necessary and important, so as to avoid the attendant negative consequences like upsetting the dataset characteristics of the entire sample size as well as the presence of data bias.

However, it needs to be stated that one of the methodological assumptions of this study was that the sample size is AMCs, which is made-up of 19 countries (see Table 1.3 and Figure 4.1). In view of the missing data problem for some of the variables and countries, we therefore considered it necessary to review this assumption, which certainly led to reduction in the sample size. According to Sekaran (2000), there is no one way at solving the problem of missing data. Nonetheless, he considered the best way as omission/deletion of the case, especially if the sample size is large. On this, Hair et al. (2006) stated that one of the rules of thumb in handling missing data problem is to ignore the missing data if less than 10 percent for an individual case and variables with as much as 15 percent missing data should be deleted. In view of this development and the submissions cited above, three sample size scenarios emerged in this study. The first scenario is the "Full Sample size", which contains all the 19 countries and variables regardless of their missing observations. The second scenario excluded all the countries with substantial and irreconcilable missing data problem like Somalia, Libya, Djibouti and Sudan. Thus, we classified 14 countries as the "Base Sample" and we arrived at 336 observations (14x24) or panel observations of 56 (14x4) for this study.

Therefore, the 14 countries belonging to this category are namely as follows: Algeria, Burkina Faso, Chad, Comoros, Egypt, Gambia, Guinea, Mali, Mauritania, Morocco, Niger, Senegal, Sierra Leone and Tunisia. The third scenario is referred to as the "Special case sample", which implies an incomplete data for just only one variable and the country affected is of prime interest to this

study. This scenario refers to Nigeria, which suffers from incomplete foreign aid data from the IDB database. This is because the data available covered only from 2005-2010 and all efforts to get it updated proved abortive. Hence, ODA data was considered as better replacement for the IDB incomplete data on foreign aid and Nigeria was separately analyzed. Essentially, we treated Nigeria as a special case in view of her prime position in the African continent and especially among the IDB member countries as one of the major shareholders (see Table 3.5) and moreover as the 4th most populated Muslim country in the world.

Nevertheless, it needs to be stated that the modification to the sample size of this study has been done in line with Alvi et al. (2008) and Kabir Hassan et al. (2011) who suffered similar missing data fate in their studies on aid-policy-growth nexus in developing countries and financial development-growth nexus in OIC respectively. Furthermore, the missing data identified with respect to some variables in the base sample were rectified with the use of exponential smoothing. The technique of solving this problem was adopted from Hansen and Tarp (2001) who used similar technique in their aid and growth regressions study.

4.6 Data Transformation using Disaggregation method

In order to achieve the estimation for hypothesis 5 of this study, it was realized that not all the base sample countries have the needed data for corruption variable, which is the major determinant for the Corruption-aid model. Hence, four countries (i.e. Morocco, Egypt, Tunisia and Senegal) among the base sample countries have more than 10 years data for Corruption Perceptions Index (CPI), which is the proxy for corruption variable. Nigeria which is considered as a

special case has 17 years complete dataset for CPI among the full sample. In view of this scenario, the coverage period was reduced to cover from 1997-2009 instead of the base period of 1987-2010 used in estimating for hypotheses 1-4.

Against this background, the data for all the variables utilized in estimating for the Corruption-aid model were disaggregated to quarterly data using Gandolfo (1981) procedure. This procedure has been adjudged as of immense benefits in the literature and that is why Ogun (2010) posits that the procedure is quite robust because it is based on order statistical theory, which is not limited to any variable type be it stock or flow. Hence, some of the past studies that adopted the Gandolfo (1981) procedure include: a study by Baharumshah, Lau and Khalid (2006) on twin deficits hypothesis in Indonesia, Malaysia, the Philippines and Thailand; Baharumshah and Lau (2007) on regime changes in East Asian countries and the sustainability of fiscal imbalance; Ogun (2010) examines the relationship between infrastructure and poverty reduction in Nigeria and a host of other studies utilized this procedure. Importantly, the use of Gandolfo (1981) procedure assumes that the observed (annual) values are integrals and as such, they are integrated within the quadratic function framework, which makes it possible to obtain the quarterly data. In order to generate the anticipated quarterly data, the procedure demands that three continuous annual observations for each variable (i.e. the current, lag and the lead values of the annual data) must be utilized. In view of this procedure, 52 observations (i.e. 13 x 4) were generated for each selected AMCs.

CHAPTER FIVE

RESULTS AND DISCUSSIONS

5.0 Introduction

This section presents the econometric software packages used and the procedures adopted in the data analyses. Similarly, the results of data analyses and discussions on the various findings in this study are presented. Hence, the results of the panel data analysis, SEM estimates, ARDL estimates, OLS estimates for topmost and least recipient countries and comparison among the methods of estimation adopted for the SEM framework (i.e. 3SLS, OLS and SURE) are carefully presented and discussed.

5.1 Data Processors

The data for this study were processed and analyzed by adopting various econometric software packages and procedures in order to enhance the robustness of the data analyses and findings. In this regard, the results on panel data analysis, SEM approach and the ARDL model based on cointegration and granger-causality tests are discussed in this section.

5.2 Panel Data Analysis

5.2.1 Spearman Rank-Order and Correlation Analysis

Among the most interesting aspects of diagnostic test, especially with the spearman rank correlation is the easiness it provides in the identification of the strength and direction for each pair-wise relationship (i.e. whether the correlation is negative or positive). The correlation result which is provided in Table 5.1 shows that among all the major variables, AID demonstrates high level of

correlation with economic growth at around 20 percent. Investment also shows correlation of 12 percent while human capital with its negative sign shows no correlation. The human capital variable demonstrates the highest level of correlation with AID at more than 53 percent while investment shows almost 49 percent correlations. There is also significant correlation between investment and human capital at almost 51 percent.

Table 5.1:
Spearman Rank-Order and Correlation Analysis (1987-2010)

Correlation	**Growth**	**AID**	**Investment**	**Human Capital**
Growth	1.000			
	____			
AID	0.196***	1.000		
	(0.000)	_____		
Investment	0.125**	0.489***	1.000	
	(0.022)	(0.000)	_____	
Human Capital	-0.019	-0.535***	-0.509***	1.000
	(0.729)	(0.000)	(0.000)	_____

Notes: The null hypothesis is no correlation among the variables. With the exception of growth all other variables are in natural logarithm. The probability values are reported in parentheses. Also, ***, ** and * indicate that the coefficient is significant at 1%, 5% and 10% levels respectively.

In this connection, we therefore submit that there is correlation between growth and AID as well as investment. Also, there is high level correlation between AID and its two proxy variables i.e. investment and human capital. Hence, we conclude by rejecting the null hypothesis of no correlation between growth and AID. Similarly, we reject the null hypothesis of no correlation between AID and investment as well as human capital. Thus, the finding is consistent with similar finding by Arellano et al. (2009). Notwithstanding, the results of the diagnostic tests for the major variables of interest in this study i.e. Growth, Investment, Human capital and Aid are presented in Appendix H. Also, the result for the

normality tests were conducted using three methods, which are skewness, kurtosis and Jarque-Bera statistic (see Appendix H).

5.3 SEM Analysis

The adoption of SEM system in this study is in line with the recommendation of Gyimah-Brempong (1992), Abiola (2003), Sullivan et al. (2011) and a host of others who considered it as the best econometric method of simultaneously investigating multiple variables like growth, investment and human capital as the case in this study. They argued that Simultaneous equations framework provides for the possibilities of uncovering interconnections that are not possible in single equation method. Also, one of the most celebrated studies by Burnside and Dollar (2000) utilized OLS and 2SLS to estimate a two SEM framework for their analysis on the relationships among foreign aid, economic policies and growth in 56 countries. However, in order to have robustness and efficiency in the estimation of our SEM framework, we adopted three methods of estimation i.e. 3SLS, OLS and SURE methods with the hope of comparing the three results and to confirm the superiority attached to the SURE method in some studies. The adoption of three methods for the estimation of our SEM system is consistent with similar adoption by Lan (2006) and Holzner (2010) in their studies on economic growth, FDI and public spending.

5.3.1 SEM Estimates for Base Sample using 3SLS

AlDakhil (1998) notes that the 3SLS is the most popular method often adopted for the estimation of SEM framework, which he equally applied in his study and as such we adopted the technique. However, the results of the estimate using this

method were not conventionally satisfactory as most of the regressors do not show significant p-values. All the regressors in the estimate for growth as the dependent variable did not show any significant level; even though the adjusted R^2 was 0.304 (i.e. 30.4 percent). Notwithstanding, AID variable shows significant level at 1 percent for investment as the dependent variable with the coefficient value of 0.170 and similar result was also obtainable in the case of human capital as the dependent variable. AID variable was significant at 1 percent level with coefficient value of -2.303 while the investment variable was significant at 5 percent level with coefficient of 12.420. In view of the fact that most of the regressors show insignificant values, especially in their p-values, we therefore confined the details to Appendix I.

5.3.2 SEM Estimates for Base Sample using OLS Method

According to Gujarati and Porter (2009), the adoption of OLS as a method of estimation for SEM framework could be possible provided the following important requirement is fulfilled i.e. the SEM framework must be a triangular, recursive or causal model. Other related requirements include: (i.) the model adopts proxy variable (s); and (ii.) OLS is utilized for the purpose of comparing its result with other method (s) like 3SLS and SURE methods as the case in this study. It is however interesting to state that all these requirements have been fulfilled, especially the most important one i.e. the SEM framework for this study is both a triangular and causal model. This is because it is made-up of three equations, which makes it triangular and the three endogenous variables adopted

are all causal in characteristics. In this vein, Gujarati and Porter (2009) stated as follows:

> In principle, one should not have much objection to the production of the results based on OLS so long as estimates based on alternative methods devised for simultaneous-equation models are also given. In fact, this approach might give us some idea about how badly OLS does in situations when it is applied inappropriately. (p. 714)

In this connection, the pooled OLS results are presented in Table 5.2. The table indicates that investment impacts on growth positively and significantly at 5 percent significance level. On the other hand, human capital proxy by infant mortality carries the expected negative sign but with no significant level. Hence, in Table 5.2, we present the results of the pooled OLS estimates for economic growth as the dependent variable.

Table 5.2:
Pooled OLS Regression Estimates for Growth

Variable	**Coefficient**	**T-ratio**	**P-value**
Investment	1.627 (0.695)	2.342	0.023**
Human capital	-0.570 (0.878)	-0.649	0.520
Poverty	22.578 (3.636)	6.209	0.000***
Initial income	-23.436 (3.353)	-6.634	0.000***

Mean = 1.738; SD = 2.569; S.E. = 1.765; Adj. R^2 = 0.528; Observations = 56

Notes: The standard errors are reported in parentheses. All the regressors are in natural logarithm. The significance levels of *** and ** imply 1% and 5% respectively.

Table 5.2 indicates that poverty is positively and significantly related to growth at significance level of 1 percent. This means higher poverty leads to higher growth, which negates conventional economic wisdom. Nevertheless, initial income shows the expected theoretical negative sign with significance level of 1 percent, which indicates support for the relevance of convergence hypothesis in AMCs.

Furthermore, the estimates for investment only show the impact of AID at the highest significance level of 1 percent and coefficient score of 0.138 while other regressors were not significant at all even at the least significance level of 10 percent (see Appendix J). Also, only two regressors demonstrate significant p-values for the human capital estimate. The two regressors with significance levels of 1 percent are AID and EDU (i.e. ln prisch) and their coefficients are -0.160 and -0.570 with the anticipated theoretical negative signs. The negative sign for AID implies that the lower the foreign aid to AMCs the higher the rate of infant mortality, which is certainly bad for human capital development (see Appendix J for details).

5.3.3 SEM Estimates for Base Sample using SURE Method

The adoption of SURE method as the lead estimation method is based on the recommendations of Zellner and Theil (1962), Zellner (2006) and Arazmuradov (2011). This is because SURE technique guarantees improved tests of hypothesis regarding regression coefficients and the values of other parameters in the SEM framework. It allows for cross-section error component correlation i.e. contemporaneous correlation and it also permits serial correlation over panels (Arazmuradov, 2011). More so, empirical finding revealed that SURE is efficient as noted by Alaba et al. (2010) and it dominates in terms of the number of significant coefficients when it was compared with OLS method. As a matter of fact, we are motivated to adopt SURE method in order to gain efficiency in estimation by combining information on different equations. Also, to test restrictions that involve parameters in different equations as exemplified in the

work of Abd Karim and Othman (2005). Their findings of both OLS and SURE application in a single system equation also revealed the superiority of SURE because the estimates produced lower standard errors as compared to OLS. Against this background, the comprehensive results from our estimation using SURE method are hereby presented on the basis of the three endogenous variables in the SEM framework i.e. growth, investment and human capital.

5.3.3.1 Economic Growth as the Dependent Variable

Table 5.3 shows the result for economic growth as the dependent variable and four other variables as the regressors or explanatory variables. The choice of these variables for inclusion as determinants of growth is based on theoretical and empirical evidences. For instance, investment is regarded as a major determinant of growth in standard growth model as espoused by Solow (1956) and Mankiw et al. (1992). More importantly, investment in our SEM system is serving as proxy variable for AID in the growth model. Importantly, infant mortality which is a proxy for human capital is considered as a flash indicator for human capital development in LDCs (Boone, 1996) and especially for Africa in view of its peculiarities (World Bank, 2010). Hence, the human capital variable is now been regarded as an important determinant of growth in contemporary economic discourse (Cheng & Zhang, 2008; David, 2001; Henderson & Russell, 2005); and more importantly, it is also serving as a proxy variable like investment in our SEM framework.

Furthermore, Clist (2011) regards GDP per capita as a better and appropriate replacement for poverty headcount as a proxy for poverty due to paucity of data as earlier enunciated in Sub-section 4.4.2.9. Also vein, one of the most prominent growth variables i.e. initial income has been adopted to account for the income convergence in AMCs in line with the convergence thesis as noted by Barro (1991) as well as Burnside and Dollar (2000). In this regard, it was observed as in Table 5.3 that investment positively and significantly impact on economic growth at 1 percent significance level. This implies that every percentage increase in the Investment-GDP ratio results in 0.02 percent increase in the economic growth rate of GDP. This finding is consistent with an earlier one by Ali and Isse (2005) and Djankov et al. (2006). On the other hand, the human capital variable which is often regarded as a significant determinant of economic growth like investment carries a negative sign due to the indicator used but with no significance level. This finding is at variance with an earlier finding by Li and Liu (2005) and Lan (2006) who found that human capital and FDI exerts strong positive effect on economic growth in developing countries. More information on these variables of interest are provided in Table 5.3.

Table 5.3:
Panel Result with Growth as Dependent Variable

Variable	**Coefficient**	**T-ratio**	**P-value**
Investment	2.290 (0.658)	3.479	0.001***
Human capital	-0.101 (0.832)	-0.121	0.904
Poverty	21.883 (3.448)	6.347	0.000***
Initial income	-22.667 (3.351)	-6.763	0.000***

Mean = 1.738; SD = 2.569; S.E. = 1.701; Adj. R^2 = 0.518; Observations = 56

Notes: The standard errors are reported in parentheses. All the regressors are in natural logarithm. With the exception of human capital, which was insignificant, all the parameters for other variables are significant at 1% significance level (i.e. ***).

However, poverty proxy by per capita GDP was significant at 1 percent but with positive sign. This means that as economic growth increases, poverty also followed the same direction of increase, which negates conventional economic wisdom and empirical evidences, which suggest that low poverty indicates a healthy economy and a positive sign of economic growth. This result shows the African peculiarities of mesmerizing growth because most African countries are ruled by elitist government, which promotes and condone an awkward growth of this nature. It is however not surprising for African countries, which suffers from high level of systemic corruption and fiscal recklessness. Similarly, most resources meant to promote welfare growth like poverty reduction and rural modernization are often squandered by the leaders in most African countries. As such, the income disparity in these countries continued to be widened between the rich and the poor. This is in view of the fact that despite increase in the economic growth, it does not translate into real welfare growth of the citizenry who are always in the majority. In this connection therefore, our finding actually lends credence to earlier submissions from scholars like Easterly and Levine (1997) who described Africa as a continent suffering from economic growth tragedy.

Collier and Gunning (1999) refers to Africa as a continent characterized by baffling outliers and one of them is the paradox of high poverty and high growth result recorded in this finding. It is not surprising therefore that most African countries declare high growth in the face of high level poverty as the case with Nigeria. This is indeed the paradox of African growth and development as rightly observed by Collier (2006) who described Africa as suffering from series of

development traps and one of such traps is the poverty trap. However, plausible explanations for this awkward finding could be that the policy makers and leaders in these countries are just cooking-up figures to cover-up their squandermania syndrome and fiscal recklessness. Also, the indicator or proxy adopted for poverty in our model i.e. GDP per capita could be a reason. This is because theoretically speaking, a high GDP per capita implies positive for the economy in the face of high economic growth. And more importantly, most Muslim countries are not guided by the principles and values of Islamic economic system, which promote social justice, equality, accountability and true economic growth. Despite this explanation, our finding still supports the reality on ground in most African countries. A good case in point is Nigeria, which perhaps has the highest rate of average growth (i.e. 9.1 percent) among the AMCs (see Table 1.6), but equally suffers from high level poverty of almost 60 percent as presented in Table 3.1. This Nigerian paradox of growth-poverty link implies "poverty amidst plenty".

Notwithstanding, the result of initial income indicates a level of income convergence in AMCs. This is because, the initial income coefficient shows the anticipated theoretical negative sign and with a very significant p-value at 1 percent significance level. This finding is consistent with theoretical proposition and empirical findings, which is indeed a validation of the convergence thesis as noted in the works of Burnside and Dollar (2000), Levine et al. (2000) and Ali and Isse (2005). Moreover, the adjusted R^2 shows that the regressors employed for estimation account for 51.8 percent explanations for the economic growth rate in AMCs. In this connection, it could be concluded that the DA of IDB positively

impact on the economic growth of AMCs through investment as the major transmission mechanism. This conclusion is consistent with previous findings, which observed that foreign aid positively impact on the growth of African countries via investment. This position is evident in the works of Gyimah-Brempong (1992), Loxley and Sackey (2008) and Eregha et al. (2012). This finding also confirms our theoretical framework, which indicates that investment is a transmission mechanism/channel and also a proxy variable for foreign aid through which it impacts on economic growth could be gauged (see Figure 2.1).

5.3.3.2 Investment as the Dependent Variable

Table 5.4 presents the result for investment as the dependent variable in our SEM framework. The growth variable shows a symbiotic relationship and causality with investment, which implies bidirectional causality as evident in the result presented in Table 5.4. This is because growth also shows positive and significant impact on investment at 5 percent significance level; although, the impact of investment on growth was higher (i.e. at 1 percent significance level). On the other hand, the result of human capital proxy by infant mortality carries the expected negative sign but with no significant impact on investment even at 10 percent significance level. In the same regard, the coefficient of inflation also has negative sign but with no significance on investment. However, the impact of AID on investment indicates positive and significance at the best significance level of 1 percent, which is highly commendable. This finding is consistent with earlier findings by Dalgaard et al. (2000) and Hansen and Tarp (2001) on the positive and significant impact of foreign aid on investment.

Table 5.4:
Panel Result with Investment as Dependent Variable

Variable	**Coefficient**	**T-ratio**	**P-value**
Growth	0.038 (0.017)	2.288	0.026**
Human capital	-0.159 (0.105)	-1.514	0.136
Inflation	-0.013 (0.041)	-0.180	0.758
AID	0.115 (0.040)	2.888	0.006***

Mean = 2.924; SD = 0.394; S.E. = 0.297; Adj. R^2 = 0.375; Observations = 56

Notes: The standard errors are reported in parentheses. With the exception of growth, all the regressors are in natural logarithm. The parameters of growth and AID are both significant at 5% (**) and 1% (***) significance levels respectively.

The coefficient of AID, which is 0.115 connotes that a one-unit increase in the AID-GDP ratio results in an average of 0.12 percent increase in the investment rate of AMCs. By extension, it means that AID increased the investment rate of AMCs by an average of 0.12 percent, which is a boost for AMCs economies in view of the poverty level and poor culture of savings, which are serving as impediments to the investment drive of most AMCs economies in the last few decades. Notwithstanding the positive impact of foreign aid on investment, it is still not significant enough due to the high level corruption and fiscal irresponsibility on the part of African leaders. And as such, resources meant for productive investments in physical and human development are diverted to unproductive areas. This position is supported by Gyimah-Brempong (2002), when he posited that corruption decreases economic growth directly and indirectly through investment in physical capital. Similar position was advanced by Aliyu and Elijah (2008) with respect to the havoc of corruption on the economy of Nigeria. Nonetheless, our result that foreign aid positively impact on the investment drive of African countries is consistent with the findings of Gyimah-

Brempong (1992) as well as Loxley and Sackey (2008). Hence, we conclude therefore that the DA of IDB positively impact on the investment drive of AMCs.

5.3.3.3 Human Capital as the Dependent Variable

The results in Table 5.5 presents the impacts of the various variables utilized in regressing human capital as an endogenous variable in the SEM framework. The growth variable shows a positive sign with no significant impact on human capital even at the 10 percent significance level. This shows that the contribution of growth to human capital is not commensurate with investment. Also, investment carries negative sign with no significant impact on human capital, which is similar to our earlier result in Table 5.4 with no significant impact of human capital on investment. Notwithstanding, the education variable which is the proxy for primary school enrolment indicates a negative sign at a strong significance level of 1 percent. In fact, the coefficient and parameter of this variable show the best result with respect to infant mortality. Thus, the result implies that the higher the level of primary school enrolment the lower the infant mortality in AMCs. This finding is consistent with conventional economic wisdom that high level of literacy impacts positively on the well-being of the society, especially in terms of health matters, which confirms the view of Gujarati (2006). This result supports the empirical findings of Boone (1996), Quazi (2005) as well as Gyimah-Brempong and Asiedu (2008) that foreign aid contributes to human capital development. The detail results of the regressors on the human capital variable are presented in Table 5.5.

Table 5.5:
Panel Result with Human Capital as Dependent Variable

Variable	**Coefficient**	**T-ratio**	**P-value**
Growth	0.024 (0.017)	1.400	0.168
Investment	-0.177 (0.141)	-1.261	0.213
EDU	-0.555 (0.118)	-4.718	0.000***
AID	-0.149 (0.041)	-3.686	0.001***

Mean = 4.281; SD = 0.516; S.E. = 0.314; Adj. R^2 = 0.592; Observations = 56

Notes: The standard errors are reported in parentheses. With the exception of growth, all the regressors are in natural logarithm. The parameters for EDU and AID are both significant at 1% significance level (i.e. ***).

Essentially, the most important variable to human capital in this SEM framework is AID and it shows the anticipated negative sign with strong significant impact on infant mortality. This result is consistent with the findings of Gyimah-Brempong and Asiedu (2008) and Islam (2003). The implication of this result for AMCs is that for a one-unit increase of AID/GDP ratio, it results in an average of 0.15 percent decrease in infant mortality. Previous studies like Huang et al. (2010) have shown that investment in human capital and by extension growth is promoted when there is decline in mortality, especially infant mortality, which seems endemic in most AMCs in view of the rampage of HIV or AIDS in the continent. Therefore, the dimension of the relationship among health improvement, human capital investments and economic growth is very significant for AMCs who are among the poorest and backward countries in the continent. In view of the foregoing analysis on the significant impact of foreign aid on human capital as proxy by infant mortality in AMCs, it is therefore evidently clear that the DA of IDB has positive and significant impact on the human capital development of AMCs, which is commendable.

5.3.3.4 Summary of the results from SEM Analysis

From the foregoing presentation of the SEM results for the three endogenous variables, it is obvious that the outcomes demonstrate positive and significant result for all the dependent variables i.e. growth, investment and human capital. This means that foreign aid has positive and significant impact on growth in AMCs through investment as the main transmission mechanism. This finding is consistent with similar findings by Gyimah-Brempong (1992) and Loxley and Sackey (2008) in their studies on the impact of foreign aid on economic growth in SSA and Africa respectively. This finding is also a support for the aid effectiveness hypothesis being championed by Chenery and Strout (1966), Papanek (1973), Burnside and Dollar (2000), Gyimah-Brempong and Asiedu (2008), Loxley and Sackey (2008) and a host of others. As such, our alternative hypothesis is therefore confirmed (i.e. IDB contributes positively to the economic performance and growth process of the AMCs). Furthermore, foreign aid demonstrates positive and significant impact on investment, which also concurs with earlier findings by Hansen and Tarp (2001). By this finding, it supports the aid effectiveness hypothesis by the Extensionist School of Thoughts on aid-growth nexus debate.

Hence, our null hypothesis is also rejected and as such, our alternative hypothesis that the DA of IDB positively impact on the investment drive of AMCs is hereby supported. In similar pattern, the direct impact of foreign aid on infant mortality shows a positive and significant impact at the best significance level of 1 percent. This finding is consistent with the results of Gyimah-Brempong and Asiedu

(2008) as well as Islam (2003) who reported in their studies that foreign aid contributes positively in reducing infant mortality. This finding also supports the result of Quazi (2005) that aid promotes human capital. Therefore, we conclude that the DA of IDB has positive impact on the human capital development in AMCs, which is actually in line with the submission of Pramanik (2003) that IDB needs to focus on primarily the development of human capital in its member countries, in order to attain the goal of competitive cooperation, so as to maximize economic efficiency in Muslim countries.

5.3.4 Comparing the Results of 3SLS, OLS and SURE Methods

Considering the view and position of Gujarati and Porter (2009) that one of the requirements or reasons that could necessitate the application of OLS to SEM framework should be to compare between the results of OLS and other methods of estimation and in this case, we have 3SLS and SURE methods. In view of this submission, we hereby present the comparative results for the three methods.

Table 5.6:
Comparison of the Results for 3SLS, OLS and SURE Methods

Variables	**3SLS**	**OLS**	**SURE**
Regressors with significance levels (SL)	2	5	6
Regressor with consistent SL	AID	AID	AID
Constant values	Fair	Better	Best
Standard errors	High	Low	Low
Adjusted R^2	Fair	Better	Better
P-values	Poor	Better	Best
Log determinant	-2.936	-3.756	-3.872
Over-identification test	1.210	-----	26.003***

Notes: The detail results for these estimation methods are provided in Appendices I, J and K.

From Table 5.6, it is evidently clear that the three methods of estimation adopted in our study have varying outcomes; although, the results for OLS and SURE methods seem to be very close. However, it is very interesting to state that the

AID variable, which is of prime importance to our study has the most significant and impressive result across all the three methods of estimation. Essentially, among all the methods adopted the SURE method has the highest number of regressors with significant and impressive values and also the lowest standard errors (see Appendices I, J and K). Perhaps, one of the most impressive points of attraction in the table above is that the over-identification tests of Hansen-Sargan for both 3SLS and SURE gives a clear picture between both methods. More interestingly, this result confirmed the theoretical expectations of Gujarati and Porter (2009) about OLS being compared with other methods as we have done in this study. Our finding on OLS as an efficient estimator of SEM implies that as long as the guiding principles for the application of OLS are truly observed, then robust outcome is likely to be recorded as the case in our study. In view of the foregoing presentation and findings, we therefore state that henceforth the results of SURE method were adopted as the main reference point and basis for subsequent analyses and discussions in this study. This is in view of the fact that it provides the best results among the three estimators adopted in this study as presented in Table 5.6.

5.4 OLS Estimates for Topmost and Least recipient countries

According to Gyimah-Brempong and Asiedu (2008), a positive impact of foreign aid on growth is partially a function of the amount disbursed to recipient countries. This implies that countries with high foreign aid should perform better than the countries with less aid. However, Harrigan and Wang (2011) observed that there are many countries that have received large sum of foreign aid from

various developed countries and multilateral donor agencies but with low performance in terms of economic growth and such countries include: Niger, Zambia, Zaire, Jamaica and Nepal among others. In this regard, there are countries like Algeria, China, Costa Rica and a host of others who received little aid but performed creditably based on the number of different development indicators. In this connection, we therefore examined the applicability or relevance of this empirical evidence to AMCs in terms of the DA provided by the IDB, which indicates that some of the countries received more than the others as shown in Appendix B.

Therefore, the results in Table 5.7 present the estimates based on our SEM framework, which we subjected to reduced-form equation to determine the linear relationship and effects between foreign aid and growth as well as investment. This adoption is in line with Boone (1996) and the submission of Gujarati and Porter (2009) who noted that reduced-form equation could be derived from larger equation(s) and OLS could be used for estimation. Therefore, the base sample countries (14) were equally classified into either topmost recipient or least recipient countries on the basis of the amount received by each country (see Appendix B). Dummy variable was used to represent the topmost and least recipient countries in our reduced-form equations with 1 denoting topmost and least equals 0. Table 5.7 presents the results of our OLS estimates.

Table 5.7:
Impacts of AID in Topmost and Least Recipient Countries

Variable	**Growth**	**Investment**
AID	0.990** (0.384)	0.123*** (0.038)
Dummy	-1.947** (0.960)	-0.034 (0.072)
Constant	-0.341 (0.895)	1.499*** (0.412)
Adjusted R^2	0.285	0.524
Mean	2.146	2.954
DW	2.085	1.321
Observations	42	42

Notes: The standard errors are reported in parentheses. The result presented above was lagged by 1 period, so as to improve the DW value. The significance levels of *** and ** denote 1% and 5% respectively.

Table 5.7 presents the results of estimation on the impacts of foreign aid on growth and investment in topmost and least recipient countries. From all indications, it shows that AID impacts positively and significantly at significance levels of 5 and 1 percent on growth and investment respectively. However, the dummy variable for growth carries a negative sign with significance level of 5 percent. This implies that AID impacts more positively and significantly in least recipient as compared to topmost recipient countries. On the other hand, the dummy variable for investment has negative sign but with no significance level. This connotes that the impacts of AID on investment is less pronounced in least recipient countries. Essentially therefore, our finding of least recipient countries having better growth performance than topmost or high recipient countries is in consonance with earlier findings by Burnside and Dollar (2000) as well as Harrigan and Wang (2011).

Also, the finding lends credence to an earlier finding by Ali and Isse (2007) who submitted that, "more and more aid leads to lower economic growth" (p. 9). This finding is also consistent with the submission of Lancaster (1999) who bemoaned poor growth in the face of high aid in Africa. He cited the cases of Zaire, Liberia, Somalia and Sudan as the four largest aid recipient countries of US aid in Africa between 1957 and 1995. Yet, these countries are among the worst economic performers in the world. Similarly, Mcmillan (2011) also observes the same trend in countries like Congo, Somalia, Zambia, Liberia, Haiti and Papua New Guinea among others.

In view of the foregoing finding, we therefore accept our null hypothesis and reject the alternative hypothesis, which states that higher development assistance leads to higher growth in topmost recipient countries. This position of dismal growth in the face of high foreign aid is further supported by the statistics presented in Table 1.3 on the average real GDP growth rate of AMCs from 2002-2010. For instance, topmost recipient countries like Algeria has 3.9 percent average GDP growth rate while Egypt has 5.1 percent, Mali (4.9 percent) and Morocco (4.6 percent) among others have less average growth rate when compared with least recipient countries like Burkina Faso (5.5 percent), Chad (8.4), Sierra Leone (8.7), Nigeria (9.1) and a host of others. These evidences also corroborate the fact that higher foreign aid leads to less economic growth, which is another good case of African growth paradox as revealed in this study.

Perhaps, among the plausible explanations responsible for low growth or dismal performance in the face of high aid could be corruption and bad governance in these countries as previously noted by Gyimah-Brempong (2002). He argued that more aid portends the tendency for high level corruption in Africa due to weak and fragile institutional frameworks. This position could further be substantiated from the Transparency International reports of 2010 and 2011 on the Corruption Perceptions Index for AMCs in Table 3.2. The serious implication emanating from the table is that none of the AMCs was able to score 5, which according to the rule of thumb connotes that any score below 5 depicts high level corruption in that country. This high level corruption and bad governance are antithetical to the Islamic economic principles of transparency, accountability and social justice.

Also, another plausible explanation could be the non-observance of the absorptive capacity of recipient countries on the part of IDB, which Hansen and Tarp (2001) referred to as the threshold (i.e. AID/GDP ratio of about 25 percent). According to them, this is the turning point at which increased aid will have a negative effect on the growth of recipient countries. Similar position was advanced by Moreira and Bayraktar (2008) on the need to be careful in raising the external aid of Niger (one of the poorest African countries) to 21 percent of GDP to reduce the poverty level in the country. This scenario could be applicable to most African countries with inadequate fiscal structure and high level corruption. Also, most countries in the continent lack growth-enhancing institutions to manage additional resources judiciously and productively because of the high level of systemic corruption and bad governance that have almost become permanent features of these countries.

Similarly, most of these countries do not adopt or apply Islamic economic principles and values in their socio-economic and political affairs. As such principles like transparency, accountability, social justice, moderation and wide circulation of wealth seem less prominent and influential in the governance mechanism and economic policy formulation of these countries. Hence, the opinion that higher foreign aid leads to lower growth is hereby supported by our empirical finding; and as such our alternative hypothesis is rejected (i.e. higher development assistance leads to higher growth in topmost recipient countries).

5.5 ARDL Estimates on Corruption-Aid Model for Selected AMCs

We estimated a corruption-aid model to empirically investigate the nature of relationship existing between corruption and foreign aid in AMCs and more particularly to examine whether corruption actually causes foreign aid or vice-versa in the long-run. This is for the purpose of proposing appropriate recommendations for policy formulation and implementation to the IDB and other development partners of Africa; in view of the fact that our Table 3.2 shows that all AMCs are corruption prone. Hence, some countries have been selected among the AMCs (i.e. Morocco, Egypt, Tunisia, Senegal and Nigeria) based on the availability of data on corruption variable measured through Corruption Perceptions Index (CPI) which covers for 13 years. As a matter of fact, Gandolfo (1981) quadratic procedure was utilized for the disaggregation of the data into quarterly basis (i.e. 1997Q1 – 2009Q4). The results in the tables present the estimates for these selected countries using Autoregressive Distributed Lag (ARDL) approach.

The sequence of the ARDL results presentation for the selected AMCs follow the pattern of the highest recipient of the DA of IDB as contained in Appendix B. Essentially, among the five countries chosen for ARDL analysis, Morocco was the highest aid recipient country followed by Egypt. In a similar vein, Tunisia received more than Senegal while Nigeria was the least recipient among the sample countries in this ARDL analysis. Nonetheless, Nigeria was treated as a special case in view of the incomplete dataset on the DA of IDB and as such, ODA was used as replacement. It is however important to state that our ARDL analysis adopted a three stage approach as noted by Kouakou (2011). Firstly, the order of integration for all the variables was sought for with the use of unit root test and once the order is determined, we proceeded to test for cointegration relationship among the variables with the use of bound test as the second stage. Finally, we utilized the granger-causality test to examine the causal relationship among the variables, especially foreign aid and corruption when cointegration exists among the variables.

5.5.1 ARDL Estimates for Morocco

Morocco is a North African country and one of the oldest member countries of the IDB since 1974. The country is the highest recipient of DA from IDB among all African countries, especially AMCs (i.e. US$4,016m). Also, the country ranked second to Tunisia among the AMCs in the Corruption Perceptions Index (CPI) report of 2011 with 3.40, which is certainly a poor score following the rule of thumb (see Table 3.2 and Appendix B). In view of this background information, we hereby present the ARDL estimates conducted to gauge the relationship

between corruption and foreign aid in Morocco. We commenced with the unit root test for stationarity and the results as contained in Table 5.8 show that some of the variables are integrated in the zero order i.e. 1(0) while others are order one integrated i.e. 1(1) or at first difference with varying significance levels of either 1 or 5 percent. The basic requirement is that ARDL procedure becomes valid only when the integration of the variables does not go beyond the first difference level as presented in Table 5.8. This implies therefore that condition for the second stage i.e. cointegration has been fulfilled. Similarly, our diagnostic test results as presented in Appendix M revealed that there is no serial correlation among all the variables, there is correct functional form and no heteroscedasticity. In view of these results, we proceeded to bound test to examine the cointegration among the variables.

Table 5.8:
Unit Root Test

Variables	**Levels**		**First Differences**	
	ADF	DF-GLS	ADF	DF-GLS
AID	-2.650	-1.400	-3.416**	-3.203***
Corruption	-1.540	-0.245	-3.372**	-8.400***
Growth	-5.394***	-4.698***	------	---------
Inflation	-6.877***	-7.015***	------	---------

Notes: The lag selection for the ADF is based on AIC with maximum lag of 4 because the study is dealing with quarterly data. In order to have a different specification, the study chose the lag for DF-GLS based on SIC with a maximum lag of 3. The null hypothesis is generally no stationarity. The significance levels of *** and ** imply stationarity at 1% and 5 % respectively.

From Table 5.9, it indicates that at 1 percent significance level, all the F-statistic fall above the upper bound with the exception of inflation. The inflation variable falls within the lower and upper bound of 5 percent significance level, which implies inconclusiveness for inflation as a dependent variable. Nevertheless,

Marashdeh and Shrestha (2010) posited that another means of establishing cointegration is by applying the ECM version of the ARDL model. In view of this submission, we therefore proceeded to the estimation of our ARDL model.

Table 5.9:
Bound Test Results

Dependent Variable	**F-Statistic**	**10%(0)**	**10%(1)**	**5%(0)**	**5%(1)**	**1%(0)**	**1%(1)**
AID	9.206***	2.711	3.800	3.219	4.378	4.385	5.615
Corruption	6.600***	2.711	3.800	3.219	4.378	4.385	5.615
Growth	10.716***	2.711	3.800	3.219	4.378	4.385	5.615
Inflation	3.837**	2.711	3.800	3.219	4.378	4.385	5.615

Notes: The null hypothesis is no cointegration. The significance levels of ** and *** connote 5% and 1% respectively. The adopted critical values are from Pesaran and Pesaran (1997).

Furthermore, the results of the Granger-causality test, which is one of the main tests in the ARDL analysis are reported in Table 5.10. The results indicate that corruption, which is one of the main variables of interest in this analysis granger-causes foreign aid at 10 percent significance level in the short-run without long-run impact (see Appendix M) and no feedback flowing from foreign aid to corruption.

Table 5.10:
Granger-Causality Results

Variables	ΔAID	ΔCorruption	ΔGrowth	ΔInflation	ECT (-1)
ΔAID	____	6.561*	19.267***	6.500***	-2.814**
ΔCorruption	1.523	_____	2.451	.853	-2.319**
ΔGrowth	3.291	11.301**	_____	2.861	-5.800***
ΔInflation	6.159	10.201**	2.343	--------	-3.675***

Notes: The chi-square statistics are reported for the variables while the t-statistic is reported for the ECT. The null hypothesis is no granger-causality. The significance levels of *, ** and *** imply 10%, 5% and 1% respectively. The coverage period is from 1997Q1-2009Q4.

Similarly, corruption granger-causes growth in the short-run at 5 percent significance level without any feedback running from growth to corruption, which implies unidirectional causality as noted in the study of Kouakou (2011) when two variables of interest behave in this manner. It is imperative to state that all the variables granger-cause foreign aid both in the short-run and long-run while there is no feedback from foreign aid to any of the variable. On the contrary, corruption granger-causes all the variables in the short-run while all the variables granger-cause corruption only in the long-run. Therefore, it can be concluded that corruption exerts significant control on foreign aid, growth and inflation variables in the short-run and this implies that corruption has domineering and predictive power in the economy of Morocco.

This result further support our finding on hypothesis 4 of topmost recipient countries (like Morocco) having dismal growth performance despite the huge amount of foreign aid they received from donors like the IDB. In fact, Morocco being the highest recipient among African countries and also among AMCs and yet, having poor CPI score provides preponderant supports for this finding (see Tables 3.2 and 3.7 for more information). Hence, we state that the corruption trap hypothesis postulated by Collier (2006) is relevant and applicable to our economic analysis of corruption in Morocco. This is because corruption granger-causes all the variables, which are important macroeconomic determinants of economic growth in any country. In view of this finding, Morocco is hereby regarded as a victim of corruption trap.

5.5.2 ARDL Estimates for Egypt

Egypt is the second most populous country among the AMCs next to Nigeria. The country is also the second largest recipient of the DA of IDB (i.e. US$3236.7m) among the African countries and yet, the CPI score for 2011 was 2.9 as against 3.10 in 2010 (see Table 3.2). This is also an indication of high level corruption in Egypt like the case of Morocco. In this regard, we present the ARDL analysis for the country starting with stationarity test. The results of the unit root test presented in Table 5.11 show that some of the variables were stationary at the first level and others at the first differences at various significance levels, which is similar to the result for Morocco. This implies that all the variables are integrated at either at level or first difference i.e. 1(1). Also, our diagnostic test results as presented in Appendix N indicate that there is no serial correlation among the variables, correct functional form exists and also the variables are heteroscedasticity free. In view of these positive results, we therefore proceeded for the bound test to confirm the long-run relationship.

Table 5.11:
Unit Root Test

Variables	**Levels**		**First Differences**	
	ADF	DF-GLS	ADF	DF-GLS
AID	-2.392	-4.833***	-3.882**	---------
Corruption	-1.694	-0.369	-3.448**	-9.502**
Growth	-2.856	-0.895	-10.700***	-1.709*
Inflation	-7.001***	-5.309***	---------	----------

Notes: The lag selection for the ADF is based on AIC with maximum lag of 4 because the study is dealing with quarterly data. In order to have a different specification, the study chose the lag for DF-GLS based on SIC with a maximum lag of 3. The null hypothesis is generally no stationarity. The significance levels of ***,** and * denote 1%, 5% and 10% respectively.

The result of the bound test is presented in Table 5.12. The table shows that F-Statistic for inflation is less than the lowest critical value even at 10 percent significance level. Thus, the F-statistic for AID falls within the lower and upper bound of 10 percent, which implies inconclusiveness for AID as a dependent variable. Nonetheless, Marashdeh and Shrestha (2010) stated that another possible way of establishing cointegration is through the application of the ECM version of the ARDL model.

Table 5.12:
Bound Test Results

Dependent Variable	**F-Statistic**	**10%(0)**	**10%(1)**	**5%(0)**	**5%(1)**	**1%(0)**	**1%(1)**
AID	2.881*	2.711	3.800	3.219	4.378	4.385	5.615
Corruption	5.041***	2.711	3.800	3.219	4.378	4.385	5.615
Growth	7.393***	2.711	3.800	3.219	4.378	4.385	5.615
Inflation	2.506	2.711	3.800	3.219	4.378	4.385	5.615

Notes: The null hypothesis is no cointegration. The significance levels of *, ** and *** connote 10%, 5% and 1% respectively. The adopted critical values are from Pesaran and Pesaran (1997).

Again, the results of the Granger-causality test presented in Table 5.13 show some interesting discoveries. Among the most prominent findings is that only foreign aid granger-causes corruption in the short-run at 5 percent significance level while corruption granger-causes foreign aid at the highest significance level of 1 percent (see Appendix N), which implies bidirectional causality. Importantly, only growth granger-causes foreign aid both in the short and long-run and the feedback from foreign aid to growth is only in the short-run at 5 percent significance level. Also, corruption granger-causes growth in the short-run at 1 percent significance level without similar causality flowing from growth and this connotes unidirectional causality according to Kouakou (2011).

Table 5.13:
Granger-Causality Results

Variables	ΔAID	ΔCorruption	ΔGrowth	ΔInflation	ECT (-1)
ΔAID	____	1.879	9.102**	1.713	-6.423***
ΔCorruption	8.307**	_____	4.992	3.808	-.934
ΔGrowth	10.959**	11.53***	_____	3.668	-.361
ΔInflation	4.032	4.019	4.788	--------	-2.446

Notes: The chi-square statistics are reported for the variables while the t-statistic is reported for the ECT. The null hypothesis is no granger-causality. The significance levels of *, ** and *** imply 10%, 5% and 1% respectively. The coverage period is from 1997Q1-2009Q4.

Similarly, foreign aid and corruption granger-cause growth in the short-run at 5 and 1 percent significance levels respectively. Hence, we can deduce that foreign aid seems to play more influential role than corruption within the economy of Egypt, which could be considered as both good and bad. It is good because it fulfilled the theoretical expectation of promoting growth, which is commendable and a desired development for the economy and people of Egypt, especially in the face of high rising poverty, inflation and unemployment in the country. According to Masoud (2011), the Arab spring in Egypt was largely and fundamentally driven due to the bad state of the economy, particularly the high rates of poverty (i.e. 70 percent Egyptians live below the poverty line) and unemployment (i.e. a quarter of the workforce is unemployed) . However, it is bad because it promotes corruption, which is responsible partly for the high rates of poverty and unemployment stated above. This situation lends credence to the Transparency International (2011) rating of Egypt as one of the most corrupt country in the world with 2.9 score (see Table 3.2). In view of the foregoing analysis, it could be concluded that there is a short-run causality flowing from foreign aid to corruption while corruption exerts long-run causality on foreign aid. This scenario implies

that bilateral/bidirectional causality exists between foreign aid and corruption, which suggests that the predictive and dominant power of corruption in Egypt is less significant as compared to the case of Morocco.

5.5.3 ARDL Estimates for Tunisia

Tunisia is also a North African country and the 4th highest recipient of DA from IDB. The country is having the best CPI score among the AMCs with 4.30 for 2010 and 3.8 for 2011 as reported in the Transparency International (2010, 2011). In view of this, we hereby present the ARDL results commencing with the unit root test. From Table 5.14, the results indicate that the variables are either at level or first difference of stationarity. Also, our diagnostic test results as presented in Appendix O show that the variables are all serial correlation free with correct functional form as well as no heteroscedasticity. Then, we move to the bound test to examine whether there is cointegration among the variables.

Table 5.14:
Unit Root Test

Variables	**Levels**		**First Differences**	
	ADF	DF-GLS	ADF	DF-GLS
AID	-4.680***	-4.704***	____	_____
Corruption	-1.601	-9.254***	-3.260*	_____
Growth	-2.971	-2.971	-6.981***	-3.176***
Inflation	-11.087***	-6.872***	--------	--------

Notes: The lag selection for the ADF is based on AIC with maximum lag of 4 because the study is dealing with quarterly data. In order to have a different specification, the study chose the lag for DF-GLS based on SIC with a maximum lag of 3. The null hypothesis is generally no stationarity. The significance levels of ***, ** and * connote 1%, 5% and 10% respectively.

The bound test result as presented in Table 5.15 shows that at 5 percent significance level, the F-statistics for three variables (i.e. AID, corruption and inflation) fall within the lower and upper bound and thus, implying inconclusiveness in the result. Similarly, the economic growth variable whose F-statistic also falls within the lower and upper bound of 1 percent significance level. Notwithstanding these inconclusive results, Kremers, Ericsson and Dolado (1992) provide an alternative method of establishing cointegration by applying the ECM version of the ARDL model; and in view of this position, we proceeded to the estimation of ARDL model.

Table 5.15:
Bound Test Results

Dependent Variable	**F-Statistic**	**10%(0)**	**10%(1)**	**5%(0)**	**5%(1)**	**1%(0)**	**1%(1)**
AID	3.928**	2.711	3.800	3.219	4.378	4.385	5.615
Corruption	3.600**	2.711	3.800	3.219	4.378	4.385	5.615
Growth	4.613***	2.711	3.800	3.219	4.378	4.385	5.615
Inflation	3.845**	2.711	3.800	3.219	4.378	4.385	5.615

Notes: The null hypothesis is no cointegration. The significance levels of ** and*** connote 5% and 1% respectively. The adopted critical values are from Pesaran and Pesaran (1997).

The results of the Granger-causality test presented in Table 5.16 demonstrate that at 1 percent significance level, all the variables granger-cause foreign aid only in the long-run; whereas foreign aid granger-causes corruption and inflation at the highest significance level of 1 percent in the short-run. Corruption exerts short-run impacts on growth at 1 percent significance level without feedback from growth. It is therefore very interesting to state that for Tunisia, foreign aid granger-causes corruption in the short-run at the highest significance level of 1 percent while corruption granger-causes foreign aid in the long-run at the same significance

level (see Appendix O). Also, all the variables granger-cause foreign aid at 1 percent significance level and in the same vein, all the variables granger-cause growth at the same significance level. Hence, from the foregoing analysis, we can infer that the relationship between foreign aid and corruption is a bidirectional causality flowing from both variables. Essentially, our finding on corruption granger-causing growth is consistent with an earlier finding by Gyimah-Brempong (2002) while the finding on foreign aid granger-causing corruption lends credence to the submission of Ali and Isse (2003) in their study on the determinants of corruption. In the same vein, the bidirectional causality between corruption and foreign aid is consistent with an earlier finding by Charron (2011). To this end, it could be concluded that our finding on the predictive power of foreign aid over corruption in Tunisia is similar to our finding for Egypt; although, the CPI score for Tunisia is the best among all the AMCs. This implies that corruption is less prominent in the country as compared to the case of Egypt, which has even long-run impact on foreign aid.

Table 5.16:
Granger-Causality Results

Variables	ΔAID	ΔCorruption	ΔGrowth	ΔInflation	ECT (-1)
ΔAID	____	3.753	1.440	1.449	-3.417***
ΔCorruption	36.652***	_____	1.732	_____	-.968
ΔGrowth	3.822	30.024***	_____	3.946	-3.907***
ΔInflation	27.246***	-------	---------	--------	-.471

Notes: The chi-square statistics are reported for the variables while the t-statistic is reported for the ECT. The null hypothesis is no granger-causality. The significance levels of *, ** and *** imply 10%, 5% and 1% respectively. The coverage period is from 1997Q1-2009Q4.

5.5.4 ARDL Estimates for Senegal

Senegal is an SSA country in the West African sub-region like Nigeria and one of the oldest member countries of IDB since 1976. The country received a total sum of US$886.8m as at 2011 from the IDB as development assistance (see Appendix B). Nonetheless, the country corruption rating according to the Transparency International (2011) reveals a poor performance like other sister countries with a score of 2.9, which depicts high level corruption in the country. In this regard, the ARDL analysis is hereby presented in tables starting with stationarity test.

Table 5.17:
Unit Root Test

Variables	**Levels**		**First Differences**	
	ADF	DF-GLS	ADF	DF-GLS
AID	-2.411	-5.705***	-3.697**	_____
Corruption	-2.849	-0.689	-10.566***	-8.590***
Growth	-3.919**	-3.576***	_____	_____
Inflation	-2.960	-3.000***	-6.761***	---------

Notes: The lag selection for the ADF is based on AIC with maximum lag of 4 because the study is dealing with quarterly data. In order to have a different specification, the study chose the lag for DF-GLS based on SIC with a maximum lag of 3. The null hypothesis is generally no stationarity. The significance levels of ***, ** and * denote 1%, 5% and 10% respectively.

The unit root test results as presented in Table 5.17 indicate that all the variables are either 1(0) or 1(1) of stationarity. This suggests that ARDL becomes invalid once any of the variables is stationary beyond the first difference. Similarly, the diagnostic test results as presented in Appendix P demonstrate that there is serial correlation free among all the variables and the functional form is correct as well as there is no heteroscedasticity. Considering these positive results for both stationarity and diagnostic tests, we therefore proceeded to the bound test, which results are presented in Table 5.18.

Table 5.18:
Bound Test Results

Dependent Variable	**F-Statistic**	**10%(0)**	**10%(1)**	**5%(0)**	**5%(1)**	**1%(0)**	**1%(1)**
AID	2.759*	2.711	3.800	3.219	4.378	4.385	5.615
Corruption	3.856**	2.711	3.800	3.219	4.378	4.385	5.615
Growth	6.799***	2.711	3.800	3.219	4.378	4.385	5.615
Inflation	5.619***	2.711	3.800	3.219	4.378	4.385	5.615

Notes: The null hypothesis is no cointegration. The significance levels of *, ** and*** connote 10%, 5% and 1% respectively. The adopted critical values are from Pesaran and Pesaran (1997).

From Table 5.18, the results show that at 10 and 5 percent significance levels respectively, the F-statistics fall between the lower and the upper bound for both foreign aid and corruption as dependent variables. The implication of this result is inconclusiveness. However, Kremers, Ericsson and Dolado (1992) proposed that another way of detecting cointegration is through the application of ECM version of the ARDL model. Hence, we therefore proceeded to ARDL estimation and the results of the causality test are presented in the table below.

Table 5.19:
Granger-Causality Results

Variables	ΔAID	ΔCorruption	ΔGrowth	ΔInflation	ECT (-1)
ΔAID	____	_____	8.181**	_____	-4.185***
ΔCorruption	66.740***	_____	12.127**	33.744***	-1.590
ΔGrowth	6.426*	_____	_____	2.999	-4.615***
ΔInflation	33.704***	19.999***	6.029	--------	-3.566***

Notes: The chi-square statistics are reported for the variables while the t-statistic is reported for the ECT. The null hypothesis is no granger-causality. The significance levels of *, ** and *** imply 10%, 5% and 1% respectively. The coverage period is from 1997Q1-2009Q4.

The Granger-causality test results for Senegal as presented in Table 5.19 seem to be very interesting because foreign aid exerts complete control on all the variables while all the variables assert short-run causality on corruption and growth

granger-causes only two variables i.e. foreign aid and corruption. Therefore, foreign aid granger-causes corruption in the short-run at the highest significance level of 1 percent with feedback running from corruption in the long-run at 5 percent significance level (see Appendix P). Also, foreign aid exerts similar causality on both growth and inflation in the short-run at 10 and 1 percent significance levels respectively. However, there is feedback flowing from growth to foreign aid in the short-run at 5 percent significance level. Hence, this relationship between both variables (i.e. foreign aid and growth) implies bidirectional or bilateral causality. Interestingly, corruption exerts control only on inflation while foreign aid asserts complete control on all the variables in the short-run with feedback running only from growth to foreign aid. In the same vein, growth granger-causes corruption in the short-run at 5 percent significance level without feedback flowing from corruption.

In this regard, it could be deduced that both foreign aid and growth have bilateral causality while there is unidirectional causality flowing from foreign aid to corruption, which supports similar finding by Ali and Isse (2003). Also, there is unidirectional causality running from growth to corruption. Hence, we can deduce that the predictive and dominating power of corruption in our economic analysis of corruption in Senegal is indeed very limited and as such the corruption trap hypothesis of Collier (2006) seems to be of little relevance. This conclusion is very similar to our finding for Tunisia and Egypt, although corruption has long-run impact for the case of Egypt.

5.5.5 ARDL Estimates for the Special Case (Nigeria)

Considering the policy implications of this study, especially the conceptual framework on foreign aid (see Section 1.6.1), which sets the benchmark for our foreign aid data as the four major categorization of DA in IDB; Nigeria was therefore excluded from the base sample for incomplete dataset. This was done to prevent measurement error and to enhance the robustness of the study. Hence, Nigeria has been treated as a Special case in view of her prime status as one of the major shareholders of IDB (see Table 3.5), the 4th most populated Muslim country in the world and also, as the most populated country in the African continent with a population of over 158 million people (CIA, 2011; OECD, 2011). The Muslim population of Nigeria is almost equal the entire population of Algeria, Morocco, Tunisia and Libya (see Table 1.3).

As a matter of fact, treating Nigeria as a special case is theoretically justified in view of the submissions made above. More so, this would allow for more empirical information to be obtained about the economy of the country considering growth tragedy confronting the country in recent times due to especially the prevalence and dominating nature of corruption. The Nigerian economic growth tragedy could be described as a "mesmerizing growth" i.e. more growth leading to more poverty and collapse of basic infrastructures – truly a case of African paradox of "excessive wealth, excessive poverty". In view of the high level corruption in the country as empirically observed by Aliyu and Elijah (2008), we therefore considered it necessary to gauge its relationship with foreign aid in the country. Hence, the ODA data on foreign aid were used as replacement

for the incomplete DA dataset of IDB and Corruption-aid nexus estimates was done separately to determine the relationship. The empirical results obtained are presented in the tables commencing with stationarity test.

Table 5.20:
Unit Root Test

Variables	**Levels**		**First Differences**	
	ADF	DF-GLS	ADF	DF-GLS
AID	-2.857	-2.843***	-6.199***	_____
Corruption	-1.679	-0.816	-4.093**	-2.771**
Growth	-2.926	-3.338***	-5.866***	_____
Inflation	-2.210	-5.314***	-3.627**	--------

Notes: The lag selection for the ADF is based on AIC with maximum lag of 4 because the study is dealing with quarterly data. In order to have a different specification, the study chose the lag for DF-GLS based on SIC with a maximum lag of 3. The null hypothesis is generally no stationarity. The significance levels of ***, ** and * connote 1%, 5% and 10% respectively.

The results of the unit root test presented in Table 5.20 indicate that all the variables are either stationary at level or first difference with either 1 or 5 percent significance level. Thus, the diagnostic test results presented in Appendix Q revealed that there is no serial correlation among all the variables, the functional form is correctly specified and no heteroscedasticity. In this connection, the bound test was conducted to examine the level of cointegration among the variables and the results are presented in Table 5.21.

Table 5.21:
Bound Test Results

Dependent Variable	**F-Statistic**	**10%(0)**	**10%(1)**	**5%(0)**	**5%(1)**	**1%(0)**	**1%(1)**
AID	10.035***	2.711	3.800	3.219	4.378	4.385	5.615
Corruption	3.835**	2.711	3.800	3.219	4.378	4.385	5.615
Growth	3.517*	2.711	3.800	3.219	4.378	4.385	5.615
Inflation	4.558***	2.711	3.800	3.219	4.378	4.385	5.615

Notes: The null hypothesis is no cointegration. The significance levels of *, ** and*** imply 10%, 5% and 1% respectively. The adopted critical values are from Pesaran and Pesaran (1997).

The results of the bound test show that at 10 percent significance level, the F-statistic falls between the lower and the upper bound with growth as the dependent variable. Similar fate holds for corruption and inflation as the dependent variables at 5 and 1 percent significance levels respectively. This scenario suggests inconclusiveness in the result. However, the proposal of Kremers et al. (1992) that another way of detecting cointegration is through the application of ECM version of the ARDL model was adopted. Hence, we proceeded to ARDL estimation and the results are reported in Table 5.22.

Table 5.22:
Granger-Causality Results

Variables	ΔAID	ΔCorruption	ΔGrowth	ΔInflation	ECT (-1)
ΔAID	------	6.686*	2.301	3.127	-1.861
ΔCorruption	.217	-------	-------	38.901***	-2.656**
ΔGrowth	6.096	10.647**	-------	2.417	-2908***
ΔInflation	2.058	20.936***	6.658*	--------	-1.252

Notes: The chi-square statistics are reported for the variables while the t-statistic is reported for the ECT. The null hypothesis is no granger-causality. The significance levels of *, ** and *** imply 10%, 5% and 1% respectively. The coverage period is from 1997Q1-2009Q4.

The Granger-causality results for Nigeria also present some interesting findings. Among them is the fact that foreign aid does not have any significant causality on all the variables in the short-run; whereas corruption exerts complete causality on all the variables, especially in the short-run similar to our result for Morocco. Hence, corruption granger-causes foreign aid both in the short and long-run at 10 and 5 percent significance levels without feedback from foreign aid (see Appendix Q). This scenario implies unidirectional causality from corruption to foreign aid. Similarly, corruption granger-causes growth in the short-run at 5 percent significance level without any feedback flowing from growth, which also suggests unidirectional causality. However, only inflation granger-causes corruption in the short-run at 1 percent significance level with feedback running from corruption also in the short-run at the highest significance level of 1 percent. This type of causality between corruption and inflation represents a bidirectional relationship, which Kouakou (2011) described as a feedback hypothesis (a variant of causality).

From the foregoing analysis, it can be deduced that the flow of causality from corruption to foreign aid and growth is essentially unidirectional without feedback from both to corruption. Therefore, in view of the foregoing analysis, it is evidently clear that Nigeria is indeed a victim of the corruption trap hypothesis postulated by Collier (2006). This is in view of the dominant and predictive control of corruption on the Nigerian economy as obviously presented in Table 5.22 and Appendix Q. Hence, our finding lends supports to the finding of Aliyu and Elijah (2008) on their study about corruption and economic growth in Nigeria. They stated that, ".....our results show that corruption has significant

negative effect on economic growth" (p. 16). As a matter of fact, our conclusion that Nigeria is a victim of corruption trap is similar to our earlier finding on Morocco, which also revealed a strong predictive control and domineering power of corruption in the economy.

5.6 Summary of Granger-Causality Results for the Selected AMCs

It is very important to state that our Granger-causality tests present numerous interesting revelations about the selected countries. In view of the foregoing discussions and analyses, the following deductions could be inferred: (i.) it is only in Morocco that all the variables granger-caused each other in the long-run; (ii.) it is also in Morocco that corruption granger-causes all the variables in the short-run; while for Nigeria, corruption granger-causes all the variables only in the short-run but granger-caused foreign aid also in the long-run; (iii.) Foreign aid plays more predictive and domineering role in Egypt, Tunisia and Senegal; (iv.) there is more of bidirectional causality between foreign aid and corruption for Egypt, Tunisia and Senegal while for Morocco and Nigeria, more unidirectional causality exists; and (v.) the corruption trap hypothesis of Collier (2006) though relevant to all the countries in the sample but it seems to be more relevant and applicable to Morocco and Nigeria in view of the strong domineering and predictive power of corruption on all the three other variables. In this connection, we present the summary of the findings for our causality tests between corruption and foreign aid, which are the main variables of interest in our ARDL analysis.

Table 5.23:
Summary of Results on Granger-Causality Tests

Variables	**Morocco**	**Egypt**	**Tunisia**	**Senegal**	**Nigeria**
AID ⟶ COR	NIL	Short-run	Short-run	Short-run	NIL
COR ⟶ AID	*Short-run	Long-run	Long-run	Long-run	*Short and Long-run
AID ⟷ COR	*NIL	Yes	Yes	Yes	*NIL
AID ⟶ AVs	NIL	NIL	NIL	Short-run	NIL
COR ⟶ AVs	*Short-run	NIL	NIL	NIL	*Short-run
AVs ⟶ AID	Short and Long-run	Long-run	Long-run	Long-run	NIL
AVs ⟶ COR	Long-run	NIL	NIL	Short-run	Long-run

Notes: The arrows ⟶ and ⟷ connotes unidirectional and bidirectional causality respectively; whereas AVs means All variables used in the estimate.*shows the areas of convergence between Morocco and Nigeria on the predictive and domineering power of corruption in the two countries.

Essentially, the results present some interesting discoveries for some countries, particularly for Morocco and Nigeria. The case of Morocco, which is even the highest recipient of the DA of IDB seems more worrisome because of the complete dominance of corruption, which confirmed the presence and relevance of corruption trap hypothesis postulated by Collier (2006). For instance, corruption granger-causes foreign aid in the short-run without feedback and it also granger-causes all variables in the short-run but the feedback running from all the variables to corruption exists only in the long-run. Conversely, Egypt seems to have a different story compared to Morocco because foreign aid predicts the causality power of corruption. Thus, foreign aid granger-causes corruption in the short-run without any feedback from corruption; even though, all the variables granger-cause foreign aid only in the long-run. Similar analysis seems to be applicable to Tunisia as the case with Egypt.

The situation in Senegal presents a more predictive power of foreign aid over corruption. This is because of the fact that apart from foreign aid granger-causing corruption in the short-run without any feedback flowing from corruption; foreign aid also granger-causes all variables in the short-run analysis. Also, it is interesting to state that all the variables granger-cause corruption in the short-run, which implies less dominant power of corruption. Furthermore, another interesting scenario is the case of Nigeria, which results is more similar to Morocco because corruption has a lot of predictive control and dominance in the country. In this vein, corruption granger-causes foreign aid both in the short and long-run without any feedback running from foreign aid to corruption and in the same vein, corruption granger-causes all the variables in the short-run analysis. The implications of these findings suggest that Nigeria like Morocco is also a victim of the corruption trap hypothesis of Collier (2006). And as rightly noted by Abuzeid (2009), many African countries are classified as lowest ranking in many areas of governance, especially on corruption, which has certainly become a socio-economic problem in the growth process of most countries in the continent.

At this juncture, it is important to state that three types of causality exist in the literature according to Kouakou (2011). The first type is when there is no causality between variables of interest and in this case we have corruption and foreign aid. This type of causality variant is referred to as neutrality hypothesis. The second type is known as unidirectional causality either from corruption to foreign aid or from foreign aid to corruption. Finally, there may be bidirectional causality between corruption and foreign aid and vice-versa; and a causality

scenario of this nature is called feedback hypothesis. This implies that both foreign aid and corruption are jointly determined by each other. In this connection therefore, it is evidently clear that our causality analyses have produced more of bidirectional causality for Egypt, Tunisia and Senegal while Morocco and Nigeria have more of unidirectional causality. Therefore, our empirical results indicate that ample evidences exist, which support that the nature of causality between corruption and foreign aid for the selected five AMCs is both in the short and long-run. Also, the pattern of causality is both unidirectional and bidirectional.

5.7 Overall Summary of the Major Findings for the Study

There is no doubt, this study has proved to be an exciting and thoughts provoking one in view of the various findings emanating from our estimates and analyses. As a matter of fact, we therefore capture the major impressive findings from the study in the following terms:

1. Aid effectiveness hypothesis in Africa, which seems to be the dominant view on aid-growth nexus debate is validated by this study in line with previous findings like Gyimah-Brempong (1992), Gomanee et al. (2005), Loxley and Sackey (2008) and a host of others;

2. Aid-investment-growth nexus positive link by various scholars like Gyimah-Brempong (1992), Hansen and Tarp (2001), Loxley and Sackey (2008) and a host of others is also supported;

3. Our empirical finding on aid-human capital positive link lends credence to previous finding by scholars like Quazi (2005) as well as Gyimah-Brempong and Asiedu (2008);

4. The empirical conclusion by Ali and Isse (2007) as well as Charron (2011) that more and more foreign aids lead to lower growth is supported;

5. The corruption trap hypothesis by Collier (2006) is substantially and significantly supported as relevant to the economic analysis of corruption in the five sample AMCs especially for Morocco and Nigeria;

6. Our study lends support to the finding of Aliyu and Elijah (2008) that corruption has significant control and effect on Nigerian economy;

7. The finding that poverty is a major challenge confronting the African continent is consistent with the submissions of Agubuzu (2004), IDB (2006a) and Masoud (2011);

8. Income convergence hypothesis is found to be relevant and applicable to the economic analysis of AMCs; and

9. OLS and SURE methods proved to be efficient estimators for SEM framework, especially for SURE method which is in line with Al-Dakhil (1998), Abd Karim and Othman (2005) and Arazmuradov (2011).

CHAPTER SIX

CONCLUSION AND RECOMMENDATION

6.0 Introduction

This section is meant to capture and summarize the entire findings and the various multi-dimensional contributions and implications inherent in the study. In this regard, the section has been divided into sub-sections, which include: theoretical, methodological and empirical contributions as well as policy implications. This is to allow for clarity in the presentation and more particularly for optimal benefits to be derived from the contributions by the IDB, other Africa development partners (like the World Bank, IMF, AfDB, OPEC, OECD and a host of others), policy makers and the academic community.

6.1 Conclusion

This study is an empirical investigation about the role of the IDB through it development assistance in contributing to growth in AMCs from 1987-2010, which is certainly a pioneering study, especially as it relates to Africa. There is no doubt that this study has shown to be very insightful and interesting in view of the positive and informative findings unearthed in the cause of our empirical investigation. Hence, this study is perhaps the first of its kind to theoretically and empirically investigate the impact of the foreign aid activities of IDB in Africa. Similarly, it is also the first study on aid-growth nexus in Africa to utilize SEM system and three methods of estimation techniques in the same study i.e. OLS, 3SLS and especially the SURE method. Therefore, the major contributions of this study have been broken down into sub-sections in order to better capture these

interesting findings and contributions with diverse perspectives and policy implications for IDB, African governments and the development partners of Africa in general.

6.1.1 Theoretical Contributions

This study certainly has implication for the theoretical framework on aid-growth nexus in view of the innovative steps adopted. Perhaps, one of the most interesting contributions of this study is that an aid-growth nexus study on Africa accepted and expanded the challenge of empirically utilizing SEM framework recommended by Gyimah-Brempong (1992). He argued that the adoption of SEM is an appropriate methodology in the study of aid-growth nexus, which would enhance robustness and findings. In fact, this study went beyond the level of adoption of the SEM framework but also modified the SEM used by Gyimah-Brempong (1992) by incorporating two important proxy variables i.e. investment and human capital to enhance the robustness of the SEM system. This adoption has further support that investment is certainly a strong determinant of growth and the major transmission mechanism through which foreign aid impacts on growth in Africa as earlier found by Gyimah-Brempong (1992) as well as Loxley and Sackey (2008).

Similarly, this study introduced a new concept into the socio-economic and political debate of Africa, which captures one of the major dynamics of development in the continent i.e. the concept of African Muslim Countries (AMCs). The essence of its introduction is to expand the frontiers of intellectual discourse in the understanding of a continent that is richly endowed resource-wise

but caught in a "series of interlocking development traps" as posited by Collier (2006). Therefore, this concept has brought to the limelight the inevitable relevance of ideological and religious characteristics of Africa, more especially as it relates to the understanding and significance of development assistance from the Islamic perspective, which IDB represents and promotes in Muslim countries.

Also, this study has contributed to the understanding and significance of Islamic model of foreign aid or development assistance as presented in Section 3.5. This study has identified the concept of development assistance from the Islamic perspective as an important resource transfer mechanism rooted in the Islamic economic norms and ideals of cooperation, social justice, sharing and altruism, which are basic elements of the *Ijtimai* sector (Third or voluntary sector) of the Islamic economic system. We therefore posit that these basic elements are the underpinning functionality principles of IDB, which operations and activities are based on the Shari'ah. Besides, the Islamic principles of cooperation and wide circulation of wealth are among the underlining ideals and elements of Islamic model of development assistance, which is basically about human *falah* (i.e. prosperity and success of man) and they are all in line with the *maqasid ash-Shari'ah* (objectives of *Shari'ah*). However, it sad to note that our empirical findings revealed dismal growth performance in topmost recipient countries and also high level corruption in selected AMCs with a plausible reason being their non-adoption these identified Islamic economic principles and values in their economic and governance affairs.

In this connection, since the developmental goals of Islam are anchored on the concepts of human well-being (*Falah* and *Sa'adah*) and good life (*Hayatun toyyibah*) in this world and hereafter (IDB, 2006a); it is therefore safe to conclude that development assistance to poor countries, especially Muslim countries are indeed laudable and commendable from the Islamic perspective. There is no doubt therefore that the impressive empirical findings from this study have underscored the relevance and significance of an Islamic model of foreign aid, which the operations and activities of IDB in almost four decades of its existence exemplify.

6.1.2 Methodological Contributions

Among the identifiable reasons why the various studies on aid-growth nexus have been characterized by mixed results and inconclusiveness as noted by Gyimah-Brempong (1992) and Easterly (2003) are due to methodological problems like model specification and methods of estimation among others. Therefore, this study has taken the challenge of minimizing these methodological problems. Hence, appropriate model (i.e. SEM), model specification and estimation methods were selected. Our triangular SEM framework satisfied the order and rank conditions as prescribed by Wooldridge (2009) and it thus satisfied the fundamental requirement for the robustness of the parameters in the SEM framework adopted for this study. In this connection, three methods of estimation techniques were adopted for the purpose of minimizing the methodological loopholes, which previous studies suffered from. Therefore, it is interesting to state that among the three methods of estimation adopted the SURE method performed better than 3SLS and OLS. Hence, the validity for the adoption of

SURE method as an appropriate estimation technique for SEM framework in this study was noted in the works of AlDakhil (1998), Zellner (2006), Holzner (2010) and Arazmuradov (2011).

Considering the facts that our findings are substantially consistent with previous findings by various scholars and writers, it does indicate that our study adopted appropriate methodology in terms of choice of model, its specification and methods of estimation. It therefore implies that subsequent studies on aid-growth nexus could take a clue from this study in order to avoid or minimize the methodological lacunas, which have been identified as responsible for the mixed results and inconclusiveness in aid-growth nexus studies.

6.1.3 Empirical Contributions

This study is perhaps the first of its kind to empirically investigate the impact of the foreign aid activities of IDB in Africa and by extension a new empirical contribution to the literature on foreign aid studies, especially from the Islamic perspective. There is no doubt that various findings and discussions emanating from this study shall certainly have policy implications for IDB and other Africa development partners. In this regard, this study is also perhaps the first study on aid-growth nexus in Africa to utilize SEM system and SURE method in the same study and equally went a step further to compare between its results with other methods of estimation i.e. OLS and 3SLS. Thus, we have empirically support the relevance of the submission of Gujarati and Porter (2009) that comparing the results of OLS with any other method for the estimation of SEM could assist in knowing more how OLS badly performs when it is wrongly applied. Considering

the fact that our study applied OLS within the context of applicability by satisfying the requirements identified by Gujarati and Porter (2009) as stated in Section 4.3.1, it was not amazing therefore that the results obtained are close to the ones obtained from SURE method but strangely, it is far better than the results of 3SLS.

Furthermore, the simultaneous estimation of growth, investment and human capital in the same model has contributed to the growing literature on the causality link among these important variables in economic discourse. Our findings show that there is serious link and particularly bidirectional causality between growth and investment. This result confirms the aid effectiveness hypothesis by the Extensionist School of Thoughts led by Chenery and Strout (1966), Papanek (1973), Gyimah-Brempong (1992), Burnside and Dollar (2000), Loxley and Sackey (2008) and a host of others. However, there is negative and insignificant causality between human capital and growth as well as investment. This shows a serious problem for Africa growth process if an important determinant of development like human capital is not positively impacted upon by growth and investment. This finding actually confirmed the reality on ground in most African countries where human capital development is neglected as symbolized in poor health care facilities, inadequate and bad state of basic infrastructures, insufficient funding of education and a host of others.

This study is also an important empirical contribution on the topical issue about the debilitating and devastating role of corruption in Africa's growth process, especially its negative impacts on foreign aid. There is no doubt that our findings

on the relationship between corruption and foreign aid have further brought to the limelight the dominating and predictive power of corruption on the economic growth of African countries, especially the selected AMCs. It is interesting to state that our findings support the relevance and prevalence of the corruption trap hypothesis of Collier (2006) with regards to two important AMCs i.e. Morocco and Nigeria. The former is the major recipient of IDB's development assistance to Africa while the later is one of the major shareholders of IDB and the most populous country in Africa. According to Anoruo and Braha (2005), only handful studies have empirically considered the impacts of corruption on the African continent despite the fact that most of the corrupt nations of the world are located in Africa. Hence, our empirical findings could therefore be regarded as additional empirical contribution to the growing literature on this important area and particularly as corruption emerges to become a major determinant of growth in the continent.

6.1.4 Policy Implications

Stemming from the various findings in this study, it portends a lot of policy implications, which could be of immense benefit to the economic growth and development process of the AMCs and the African continent as a whole. Hence, the positive contributions of IDB to the economic growth of AMCs have further lent credence to the aid effectiveness hypothesis. This implies that foreign aid contributes to the growth process of Africa countries and as such its continuation should be encouraged. The insignificant contribution of human capital to growth and investment in our findings revealed that there is poor state of human capital

development in these countries. Hence, the policies towards improving the educational and health sectors must be a topmost agenda among African leaders and IDB as development partner should pay adequate attention to these germane aspects of human capital development. Our findings also brought to the fore the continuous presence of poverty as an important challenge confronting the AMCs, which implies plausible macro distortions and poor governance in AMCs. This is in view of the fact that more growth was recorded and yet, poverty continues to increase unabated among the AMCs. In this connection therefore, more policies towards concrete efforts at reducing poverty needs to be put in place in order to arrest this ugly trend. This is because poverty is serving as a causative agent for the continuous rise in the socio-political tensions and crises in most AMCs, as evident in the Arab spring.

Similarly, our findings revealed that more development assistance could produce dismal economic performance if the enabling economic and policy environments are absent as earlier observed in the findings of Burnside and Dollar (2000), Mallik (2008) as well as Harrigan and Wang (2011). This is because evidences from our study suggest that plausible reasons for the dismal growth performance in topmost recipient countries could be as a result of bad governance and more particularly with the presence of high level corruption, which the case of Morocco support. Therefore, there is the need for more focus and pragramatic policies and measures to curtail these two challenges confronting the continent and more especially, the IDB should encourage these countries to adopt Islamic economic principles and values in their socio-economic and political affairs. For instance,

the IDB could be of enormous assistance in enthroning good governance and corruption free AMCs by establishing vibrant mechanisms for accountability and monitoring of all funds disbursed by IDB to AMCs. The IDB could also adopt the principle of conditionality that future development assistance shall be based on the prudent, transparent and judicious use of past aid received.

Also, the issue of donor intent in the administration of foreign aid, which is regarded by scholars like Bermeo (2011) as fundamental to the aid effectiveness in LDCs is indeed one of the main reasons for the positive and significant impacts of the DA of IDB on the growth of AMCs. The underpinning philosophy and principles of IDB's operations are rooted in the Shari'ah, which emphasizes development and socio-economic well-being (i.e. health, wealth and education) of the people (see IDB, 2006a). Hence, other multilateral donor agencies and institutions need to borrow a leaf from the IDB in terms of clear philosophy, vision and mission of development assistance in genuinely contributing to growth in poor countries like AMCs. Also, IDB must persist and insist in the continuation of policies that strengthen the realization of its Vision 1440H, which is often regarded as a vision for human dignity. Our finding revealed the possibility of absolute income convergence for the AMCs if visions of this nature like the MDGs are allowed to come to fruition. As such, policies from the leaders of AMCs and the IDB are imperative to promote more growth, increased investment, human capital development, more employment opportunities and necessary infrastructures. In this regard, incorporating Islamic economic principles and ideals in the various policy conceptualization, formulation and implementation by

the leaders of AMCs would go a long way in improving and promoting the economic growth and development process of these countries as evident in the case of Malaysia and Saudi Arabia.

6.1.5 Scope and Limitations

It is important to acknowledge the fact that various studies have been conducted on various socio-economic and political affairs of Africa and its two major regions i.e. Sub-Saharan Africa and the North Africa. Given the obvious fact that the continent is a complex, heterogeneous, ethno-linguistic and religiously characterized part of the world; this study explored a new perspective in the economic and political debate of the continent. As a matter of fact, this study investigated the impacts of the foreign aid activities of IDB on the economic growth of AMCs with the use of balanced panel data from 1987-2010. Nevertheless, the limitations of this study emanated from the poor record keeping of some of the countries under study; thus, annual time-series data on country specific could not be easily collected. Hence, the study utilized data from the Central Bank of Nigeria (CBN), AfDB, IDB, World Bank and IMF.

Again, the anticipated 35 years coverage of IDB operations and activities in the selected African countries, which was initially planned, could not be accomplished due to paucity of data for some countries and variables, especially from the IDB database and Transparency International on CPI. Considering these identified limitations, this study could only cover from 1987-2010 (i.e. 24 years) based on the availability of data. This situation also led to reduction of the full sample size of 19 countries to 14 countries as the base sample. Notwithstanding,

there is still need for more researches on the aid effectiveness of all the 27 member countries of IDB from Africa and perhaps on the contributions of IDB to the growth process of Africa as a continent. Considering the negative and devastating effects of corruption on foreign aid and economic growth as established by our findings of selected AMCs, it implies that more studies of this nature are still required to unravel the mystery of corruption and the anti-corruption strategies that are needed to effectively control its spread and debilitating consequences on the AMCs and the continent as a whole.

6.2 Recommendation

It is certainly gratifying to discover that our empirical findings on the development assistance of IDB lend credence to the popular aid effectiveness hypothesis in Africa. However, what is most important now is how the economic growth of these countries and Africa at large could further be enhanced through putting in place incentives and measures that augment the ability and capability of its DA. Stemming from these interesting findings, we hereby deem it pertinent to make the following recommendations. Since the DA of IDB contributes to the economic growth of AMCs, it implies that its continuation to these countries is desirable and perhaps more aid should be channelled to them for more growth and development, which is in line with the Key Strategic Thrust Five of IDB Vision 1440H (see IDB, 2006a).

Importantly, since the most outstanding findings emanating from this study is the confirmation of investment and human capital as the transmission mechanisms through which foreign aid impacts on growth could be measured as earlier

revealed by Gyimah-Brempong (1992), White (1992), Hansen and Tarp (2001) as well as Loxley and Sackey (2008). Hence, IDB and other development partners of Africa should intensify their efforts towards promoting and contributing more to these two important determinants of growth in the continent. Similarly, the findings from this study has further support the urgent need to give special attention to the development of human capital in AMCs, which is in line with the submission of Gyimah-Brempong and Asiedu (2008).

Therefore, in order to stimulate real and meaningful growth and sustainable development in Africa, issues relating to human capital development must be given topmost priority through SWAPs (i.e. Sector Wide Approaches) and technical assistance with particular emphasis on education and health matters. This emphasis on the promotion of education and health matters is in line with the Key strategic Thrust Three and Four as contained in the IDB Vision 1440H. Also, poverty as a serious socio-economic challenge to Africa seems to be dominant in our finding because as growth increases, poverty follows the same direction, which is certainly an affirmation of the perversity thesis. Thus, it renders the growth achievement to be a "mesmerizing growth" and this implies that there is urgent need to provide more development assistance towards poverty-reduction, since one of the theoretical objectives of foreign aid is poverty alleviation.

As a matter of fact, measures such as creating growth centres in AMCs for the purpose of spreading the gains of the DA of IDB to the grassroots have become imperative. Empirical studies have revealed that agriculture and rural development, education and health are directly pro-poor projects with direct

impacts because they help to reduce national poverty. As suggested by Easterly (2006), committed local philanthropists could be involved in the various poverty alleviation programmes and projects in Africa to curb the aid fungibiltiy and mismanagement of resources. Therefore, for poverty to be seriously tackled in AMCs, the leaders must be made to have strategic plans penetrating the grassroots and meeting the expected targets.

Stemming from our findings that least recipient countries like Burkina Faso, Chad and Sierra Leone among others have better growth than topmost recipient countries like Morocco, Egypt, Tunisia etc., we recommend that more funds should be channelled to these countries with the proviso that the threshold of absorptive capacity (i.e. 25 percent ratio of AID-GDP) for each country should be observed with caution as noted by Hansen and Tarp (2001). This is to avoid upsetting the current growth rate pattern of the least recipient countries and thus causing harm rather than good to their economies. Also, considering the ample evidences available stemming from our findings that corruption is a cankerworm in the economies of all the selected AMCs, especially for Morocco and Nigeria who are victims of corruption trap, we recommend that IDB should be more committed to the anti-corruption measures in AMCs. And perhaps, the urgent need to promote more policies that would stem this tide of high level corruption dominating these countries. The IDB could do this by promoting transparency, accountability and good governance among the member countries, particularly AMCs in all its interactions and transactions. The promotion and enthronement of these important ideals and principles are certainly in line with the *Maqasid ash-*

Shari'ah, which serves as the underpinning religious policy mechanism of the IDB in its transactions and interactions. In the same direction, the IDB should assists the AMCs in creating progressive forces along Islamic principles of social justice and wide circulation of wealth who shall become local ownership of genuine economic reforms, especially through growth centres in the rural societies. This is in view of the undeniable fact that the core purpose of foreign aid is to promote economic growth and reduce poverty of the rural poor in LDCs.

In this connection, the IDB should give more preference to loans above grants disbursement. This is in view of the fact that empirical studies (like Gyimah-Brempong, 1992; Quazi, 2005; Akram et al. 2011) show that loans have more positive and significant impacts on economic growth. Also, loans might help to induce more discipline because of the conditionality of repayment, which in most cases is not applicable to grants. Similarly, there is the incentive of efficient utilization of funds connected to loans and it provides mechanism to enforce investment and reduce rent-seeking effects, which are vast becoming general characteristics of most AMCs.

Furthermore, the IDB needs to pay more attention to the peculiarities of individual AMCs, so that appropriate financial assistance and economic policy measures are provided for the advancement of their economies. For instance, countries like Morocco and Nigeria suffer more from corruption as evident in our findings and more particularly bad governance. As such, more financial assistance to a country like Nigeria is not the solution but rather more commitment towards enthroning good governance and the political will to squarely fight corruption to a stand still

in the country. Despite, the poor record of Nigeria as one of the lowest ranking countries in the world in many areas of governance, especially on corruption, the US has estimated the sum of US$660.4 million as foreign aid to Nigeria for the year 2012, which makes the country the second largest recipient behind Kenya ($751.4 million) (Dagne, 2011).

And as rightly noted by Lancaster (1999), donors must be genuinely and sincerely interested in knowing what a country needs in order to provide the appropriate assistance and not gambling as the case with some donor agencies in Africa. In view of this scenario, it would be foolhardy to expect foreign aid to make purposeful impacts on the economy of aid recipient countries like Nigeria when the domineering and predictive power of corruption goes uncontrolled and the donor agencies are unaware or less concern about this ugly and perturbing situation in the recipient countries. Therefore, one of the good things IDB should do is to assist in the fight against corruption and enthroning good governance in the country because Nigeria is perhaps the most naturally and human resource endowed country in the African continent. Unfortunately, due to these twin problems identified above, poverty, unemployment, inflation, social tension and insecurity are now the order of the day. Therefore, for the development assistance to continue to make meaningful and purposeful contributions to the growth and development process of the continent, the principle of aid selectivity must be adopted and adhered to. Lancaster (1999) and Easterly (2005) recommend the adoption of this principle by donors to solve the problem of ineffectiveness of aid in Africa. In fact, Lancaster (1999) believes that the foreign aid miracle in Korea

in the 1950s could be repeated in African countries if donors are sincere to make recipient countries adopt more efficacious policies and reforms. And as aptly noted by Abuzeid (2009), the very goal of any meaningful reform is to enhance and promote good governance and reduce the level of corruption in the country.

Since the main function of IDB is the provision of various forms of development assistance for economic growth and poverty alleviation among member countries, we recommend that the IDB should strongly and consistently forge economic cooperation among the AMCs through promoting more trade and investments in both physical and human capital. Certainly, forging strong ties of economic cooperation and altruism are among the main ideals and principles of Islamic model of foreign aid, which the IDB must religiously popularize among the AMCs and the entire member countries. This is in view of the fact that the anticipated benefits of the Third or Voluntary Sector have not been fully utilized because most Muslim countries especially in Africa are yet to realize the significant socio-economic benefits of this sector. Sadeq (1990) submits that Muslim countries cooperation among themselves is even a requirement in the Islamic code of life for the socio-economic development of the society. In this connection therefore, the institutions of *Zakah*, *Waqf* and *Sadaqah* should be made more vibrant and functional, so as to contribute meaningfully and purposefully to the economic development of AMCs and other Muslim countries.

Lastly and importantly, the IDB must assist the African continent in solving the problem of aid-dependency syndrome, which some studies have identified could lead to aid fatigue and also responsible for the "rentier state" tendency of most

countries. Hence, the IDB should adopt the principle and policy of gradual disengagement by making it clear to African countries that its development assistance henceforth is a temporary form of financing that shall gradually be phased-out within a timeframe. This type of policy produced the popular Korean miracle of the 1950s when the US disengaged from further aid to Korea. Abuzeid (2009) notes that doing this will allow built-in incentives on the part of recipient countries to create and nurture productive, self-sustaining investments and adopt constructive policies that would propel their economies to higher growth.

In this regard, the adoption of this principle has even become more necessary and important than ever if the development assistance of IDB must be delivered to reinforce a virtuous cycle of development in contradistinction to promoting a vicious cycle of poor governance and dismal economic growth as noted by Brautigam and Knack (2004). This scenario is likely to be the fate of the DA of IDB in the nearest future if the principles of aid selectivity and gradual disengagement are not incorporated as substantive principles in the IDB policy philosophy on its development assistance.

REFERENCES

Abd Karim, M. Z., & Othman, Y. (2005). Does AFTA and China's entry into WTO affect FDI in ASEAN countries. *Asian Academy of Management Journal, 10*(1), 37-58.

Abdullahi, S. (2009). The imperative of good governance in effective service delivery and poverty reduction in Nigeria. *Academy International Journal of Marketing Management, 1*(1), 121-141.

Abegaz, B. (2005). Multilateral development aid for Africa. *Economic Systems 29*, 433-454. doi:10.1016/j.ecosys.2005.06.005

Abiola, A. G. (2003). Resource gaps and economic growth in Nigeria: 1970-1999. *Journal of Social Sciences, 7*(3), 193-200.

Abuzeid, F. (2009). Foreign aid and the "Big Push" theory: Lessons from Sub-Saharan Africa. *Stanford Journal of International Relations, XI*(1), 16-23.

Adelman, C., Eberstadt, N., Raymond, S., & Griswold, M. (2007). *Foreign assistance: What works and what doesn't with recommendations and future improvements*. Prepared for the HELP Commission.

Adeoye, T. (2006). *Fiscal policy and growth of the Nigerian economy: An empirical perspective.* NISER Monograph Series No. 3. Ibadan: Nigerian Institute of Social and Economic Research.

Addison, T., Mavrotas, G., & McGillivray (2005). Aid to Africa: An unfinished agenda. *Journal of International Development, 17*, 989-1001.

African Development Bank (2001). *A note on the contribution of the African Development Bank to economic knowledge and policy in Africa*. UK: Blackwell Publishers.

African Development Bank (2004). *African Development Report 2004: A summary*. Abidjan.

Africafocus Bulletin (2007). *Ibrahim Index of African Governance*. Retrieved on July 17, 2008 from http://www.moibrahimfoundation.org/.

Agubuzu, L. O. C. (2004). *From the OAU to AU: The challenges of African unity and development in the twenty-first century*, NIIA Lecture Series No. 83. Lagos: Nigerian Institute of International Affairs.

Ahmad, N. (1973). *Foreign aid, development and regional disparities: A case study of the emergence of Bangladesh.* An unpublished PhD Thesis, Department of Economics, University of Montreal.

Ahmed, H. (2004). *Role of Zakah and Awqaf in poverty alleviation. Occasional Paper No.8.* Jeddah: Islamic Research and Training Institute, IDB.

Ahmed, S. (2009). *Islamic Banking, Finance and Insurance: A Global overview*. Kuala Lumpur: A.S. Noordeen.

Akonor, K. (2008). Foreign aid to Africa: A hollow hope? *International Law and Politics, 40*, 1071-1078.

Akpokodje, G., & Omojimite, B.U. (2008). The effect of aid flows on Nigeria's agricultural growth. *Pakistan Journal of Social Sciences, 5*(6). 514-520.

Akram, M., Mansoor, H. H., & Mahpara (2011). An empirical analysis of impact of foreign aid on economic growth: The case of Pakistan. *Information Management and Business Review, 3*(5), 235-241.

Alaba, O. O., Olubusoye, E. O., & Ojo, S. O. (2010). Efficiency of seemingly unrelated regression over the ordinary least squares. *European Journal of Scientific Research, 39*(1), 153-160.

AlDakhil, K. I. (1998). A method for estimating simultaneous equations models with time series and cross-section data. *Journal of Administrative Science King Saud University, 10*(1), 13-28.

Alesina, A., & Dollar, D. (2000). Who gives foreign aid to whom and why? *Journal of Economic Growth, 5*, 33-63.

Ali, A. M., & Isse, H. S. (2003). Determinants of economic corruption: A cross-country comparison. *Cato Journal, 22*(3), 449-466.

Ali, A. M., & Isse, H. S. (2005). An empirical analysis of the effect of aid on growth. *International Advances in Economic Research, 11*, 1-11. doi:10.1007/s11294-004-7177-6

Ali, A. M., & Isse, H. S. (2006). An empirical analysis of the determinants of foreign aid: A panel approach. *International Advances in Economic Research, 12*(2), 241-250.

Ali, A. M. & Isse, H. S. (2007). Foreign aid and free trade and their effect on income: A panel analysis. *Journal of Developing Areas, 41*(1), 127-142.

Aliyu, S. U. R., & Elijah, A. O. (2008). Corruption and economic growth in Nigeria: 1986-2007. *MPRA Paper No. 12504*. Retrieved on June 13, 2011 from http://mpra.ub.uni-muenchen.de/12504/

Alvi, E., Mukherjee, D., & Shukralla, E. K. (2008). Aid, policies, and growth in Developing countries: A new look at the empirics. *Southern Economic Journal, 74* (3), 693-706.

Anderson, E., & Waddington, H. (2007). Aid and the Millennium Development Goals poverty target: How much is required and how should it be allocated? *Oxford Development Studies, 35*(1), 1-31.

Anoruo, E., & Braha, H. (2005). Corruption and economic growth: The African experience. *Journal of Sustainable Development in Africa, 7*(1), 43-55.

Arazmuradov, A. (2011). *Foreign aid, foreign direct investment and domestic investment nexus in landlocked economies of Central Asia.* Department of Economics and Management of Technology, University of Bergamo, Dalmine, Italy.

Arellano, C., Bulir, A., Lane, T., & Lipschitz, L. (2009). The dynamic implications of foreign aid and its variability. *Journal of Development Economics, 88*, 87-102.

Armah, S., & Nelson, C. (2008). Is foreign aid beneficial for Sub-Saharan Africa? A panel data analysis. *Selected Paper (467246)* at the American Agricultural Economics Association Annual Meeting, July, 27-29.

Arnold, G. (1985). *Aid and the Third World: The North/South divide*. London: Robert Royce Limited.

Asiedu, E., Jin, Y., & Nandwa, B. (2009). Does foreign aid mitigate the adverse effect of expropriation risk in foreign direct investment? *Journal of International Economics, 78*, 268-275. doi:10.1016/j.jinteco.2009.03.004

Asteriou, D. (2009). Foreign aid and economic growth: New evidence from panel data approach for five South Asian countries. *Journal of Policy Modeling, 31*, 155-161. doi:10.1016/j.jpolmod.2008.04.012

Ayittey, G. B. N. (2005). *Debt relief for Africa.* Retrieved on May 25, 2008 from www.AfricaEconomicAnalysis.org.

Ayub, M. (2008). *Understanding Islamic Finance.* Chichester, GBR: John Wiley & Sons Ltd.

Azarnert, L. V. (2008). Foreign aid, fertility and human capital accumulation: Evidence from SSA. *Economica*, *75*(300), 766-781.

Aznan, S. J. (2008). *Opening statement*. In Kasekende, L. A.'s Outlook for sustained Economic Growth in Africa: The case of IDB Member countries. Jeddah: IDB.

Baharumshah, A., & Lau, E. (2007). Regime changes and the sustainability of fiscal imbalance in East Asian countries. *Economic Modelling*, *24*, 878-894.

Baharumshah, A., Lau, E., & Khalid, A. (2006). Testing twin deficits hypothesis using VARS and variance decomposition. *Journal of the Asia Pacific Economy*, *11*(3), 331-354.

Bai, J., & Ng, S. (2005). Tests for skewness, kurtosis and normality for time series data. *Journal of Business and Economic Statistics, 23,* 49-60.

Barrett, C. B., Carter, M. R., & Little, P. D. (2008). *Understanding and reducing persistent Poverty in Africa*. New York: Routledge.

Barro, R. J. (1991). Economic growth in a cross-section of countries. *Quarterly Journal of Economics, 106,* 407-443.

Barro, R. J. (1996). Determinants of economic growth: A cross- country empirical study. *National Bureau of Economic Research NBER Working Paper No.w5698*.

Barro, R. J. (2001). Education and economic growth. In: Helliwell, J.F. (ed.), *The Contribution of Human Capital and Social Capital to sustained Economic Growth and Well-being*, OECD.

Barro, R. J., & Sala-I-Martin, X. (2004). *Economic Growth (second edition)*. London: The MIT Press Cambridge.

Bauer, P. T. (1972). *Dissent on development: Studies and debate in Development Economics*. Cambridge: Harvard University Press.

Ben Amar, M., & Hamdi, M. T. (2012). Global competitiveness and economic growth: Empirical verification for African countries. *International Journal of Economics and Finance, 4*(6), 125-131. doi: 10.5539/ijef.v4n6p125

Bermeo, S. B. (2011). Foreign aid and regime change: A role for donor intent. *World Development*, *39*(11), 2021-2031.

Bjerg, C., Bjornskov, C., & Holm, A. (2011). Growth, debt burden and alleviating effects of foreign aid in Least Developed countries. *European Journal of Political Economy, 27*, 143-153. doi:10.1016/j.ejpoleco.2010.08.003

Boone, P. (1996). Politics and effectiveness of foreign aid. *European Economic Review, 40*(2), 289-329.

Bond, P. (2001). Foreign aid and development debates in post-apartheid South Africa. *Transformation, 45*, 25-36.

Bovard, J. (1986). The continuing failure of foreign aid. *Cato Policy Analysis* No. 65.

Brautigam, D., & Knack, S. (2004). Foreign aid, institutions and governance in Sub-Saharan Africa. *Economic Development and Cultural Change, 52*(2), 255-286.

Burnside, C., & Dollar, D. (2000). Aid, policies and growth. *American Economic Review, 90*, 847-868.

Bushra, Y. (2005). Foreign capital inflows and growth in Pakistan: A Simultaneous Equation Model. *South Asia Economic Journal, 6*(2), 207-219.

Calderisi, R. (2006). *Turning on the lights: A short history of foreign aid in Africa.*

Central Intelligence Agency (2011). *The World Factbook.* Retrieved on March 19, 2012 from https://www.cia.gov/library/publications/the-world-factbook/2011

Charron, N. (2011). Exploring the impact of foreign aid on corruption: has the "Anti-Corruption Movement" been effective. *The Developing Economies, 49*(1), 66-88. doi:10.1111/j.1746-1049.2010.00122.x

Chaudhuri, P. K. (1978). *Exports, foreign capital inflow and economic growth.* Crosby: Lockwood Staples.

Chenery, H. B., & Strout, A. (1966). Foreign assistance and economic development. *American Economic Review*, *56*(4), 679-733.

Cheng, W., & Zhang, D. (2008). The effects of foreign aid on the creation and distribution of wealth. *Annals of Economics and Finance*, *9*(2), 223-237.

Clist, P. (2011). 25 years of aid allocation practice: Whither selectivity? *World Development*, *39*(10), 1724-1734. doi:10.1016/j.worlddev.2011.04.031

Collier, P. (1999). Explaining African economic performance. *Journal of Economic Literature*, *37*, 64-111.

Collier, P. (2006). African Growth: Why a "Big Push". *Journal of African Economies*, *100*(2), 188-211.

Collier, P., & Gunning, J. (1999). Why has Africa grown slowly? *Journal of Economics Perspective*, *13*, 3-22.

Collier, P., & Dollar, D. (2002). Aid allocation and poverty reduction. *European Economic Review*, *46*, 1475-1500.

Consultancy Africa Intelligence (2010). *Corruption in Africa: A crime against development.* Retrieved on January 19, 2011 from http://www.consultancyafrica.com.

Dagne, T. (2011). Africa: U.S. foreign assistance issues. Congressional Research Service. Retrieved on February 19, 2012 from www.crs.gov.

Dalgaard, C. J., Hansen, H., & Tarp, F. (2000). Aid effectiveness disputed. *Journal of International Development, 12*, 375-398.

David, P. A. (2001). Knowledge, capabilities and human capital formation in economic growth. *New Zealand Treasury Working Paper 01/13*.

Desai, M. (2002). *The debt of development: Beyond the question of price*, NIIA Lecture Series No. 80. Lagos: Nigerian Institute of International Affairs.

Dike, V. E. (2011). *Corruption in Nigeria: A new paradigm for effective control.* Retrieved on February 19, 2012 from www.AfricaEconomicAnalysis.org.

Djankov, S. Montalvo, J. G., & Reynal-Querol, M. (2006). Does foreign aid help? *Cato Journal, 26*(1), 1-28.

Dollar, D. (2006). The increasing selectivity of foreign aid, 1984-2003. *World Development, 34*(12), 2034-2046.

Dollar, D., & Kraay, A. (2002). Growth is good for the poor. *Journal of Economic Growth, 7*, 195-225.

Dollar, D., & Levin, V. (2006). The increasing selectivity of foreign aid, 1984-2003. *World Development, 34*(12), 2034-2046.

Dovern, J., & Nunnenkamp, P. (2007). Aid and growth accelerations: An alternative approach to assessing the effectiveness of Aid. *KYKLOS, 60*(3), 359-383.

Dowden, R. (2011). *Transforming Nigeria.* A speech presented at the Ministry of Foreign Affairs to mark Nigeria's 51st Independence Anniversary.

Dowling, Jr. J. M., & Hiemenz, U. (1983). Aid, savings and growth in the Asian region. *The Developing Economies, 21*(1), 3-13.

Dupasquier, C. & Osakwe, N.P. (2006). Foreign direct investment in Africa. Performance, challenges and responsibilities. *Journal of Asian Economics*, 27, 241-260.

Easterly, W., & Levine, R. (1997). Africa's growth tragedy: Policies and ethnic divisions. *Quarterly Journal of Economics*, *112*(4), 1203-1250.

Easterly, W. (1998). The quest for growth: How we wondered the tropics trying to figure out how to make poor countries rich. *World Bank.*

Easterly, W. (1999). The ghost financing gap: Testing the growth model used in International Financial Institutions. *Journal of Development Economics, 60*(2), 423-438.

Easterly, W. (2003). Can foreign aid buy growth? *Journal of Economic Perspectives, 17*(3), 23-48.

Easterly, W. (2005). *Can foreign aid save Africa?* Clemens Lecture Series. Saint John's University.

Easterly, W. (2006, February 13). The West can't save Africa: Locals must take the lead. *The Washington Post*.

Easterly, W. (2007a). Are aid agencies improving? *Economic Policy, 22*(52), 633-678.

Easterly, W. (2007b). Was development assistance a mistake? *American Economic Review, 97*(2), 328-332.

Easterly, W., Levine, R., & Roodman, D. (2004). New data, new doubts: A comment on Burnside and Dollar's aid, policies and growth (2000). *American Economic Review*, *94*(3), 781-784.

Easterly, W., & Williamson, C. (2011). Rhetoric versus reality: The best and worst of aid agency practices. *World Development, 39*(11), 1930-1949.

Ekanayake, E. M., & Chatrna, D. (2010). The effect of foreign aid on economic growth in developing countries. *Journal of International Business and Cultural Studies, 3,* 1-13.

Eregha, P. B., Sede, P. I., & Ibidapo, C.O.K. (2012). Foreign aid flows, investment and economic growth in Africa: Does uncertainty matter? *African Journal of Social Sciences, 2*(2), 100-107. Retrieved on February 16, 2012 from www.sachajournals.com

Feyzioglu, T., Swaroop, V., & Zhu, M. (1998). A panel data analysis of the fungibility of aid. *World Bank Economic Review*, *12*(1), 29-58.

Fleck, R. K., & Kilby, C. (2010). Changing aid regimes? U.S. foreign aid from the cold war to the war on terror. *Journal of Development Economics, 91*(2), 185-197. doi:10.1016/j.jdeveco.2009.09.011

Friedman, M. (1958). Foreign economic aid: Means and objectives. *Yale Law Review, 47*, 24-38.

Fukuda, T., & Dahalan, J. (2011). Finance-growth-crisis nexus in India: Evidence from cointegration and causality assessment. *International Economics, LXIV*(3), 297-328.

Gambari, I. A. (2004). *The New Partnership for African Development: Challenges and progress in organizing International support*, NIIA Lecture Series No. 85. Lagos: Nigerian Institute of International Affairs.

Gandolfo, G. (1981). *Qualitative analysis and econometric estimation of continuous time dynamic model.* Amsterdam: North-Holland.

Gillanders, R. (2010). *The effect of foreign aid in Sub-Saharan Africa*. School of Economics, University College Dublin (UCD), Ireland.

Goldsmith, A. A. (2001). Foreign aid and statehood in Africa. *International Organization*, *55*(1), 123-148.

Gomanee, K., Girma, S., & Morrisey, O. (2005). Aid and growth in Sub-Saharan Africa: Accounting for transmission mechanisms. *Journal of International Development, 17*(8). 1055-1075.

Greene, W. H. (2007). *Econometric Analysis (6th ed.)*. New York: Prentice Hall International Inc.

Griffin, K. (1970). Foreign capital, domestic saving and economic development. *Oxford Bulletin of Economics and Statistics, 32*(2), 99-112.

Gujarati, D.N. (2006). *Essentials of econometrics (3rd ed.)*. New York: Mc Graw-Hill/Irwin Companies.

Gujarati, D.N. & Porter, D.C. (2009). *Basics of econometrics (5th ed.)*. New York: McGraw-Hill/Irwin Companies.

Gyimah-Brempong, K. (1992). Aid and economic growth in LDCs: Evidence from Sub-Saharan Africa. *Review of Black Political Economy*, 20(3), 31. Retrieved on August 24, 2008 from http://search.ebscohost.com.eserv.uum.edu.1

Gyimah-Brempong, K. (2002). Corruption, economic growth and income inequality in Africa. *Economics of Governance, 3*, 183-209.

Gyimah-Brempong, K., & Wilson, M. (2005). Human capital and economic growth: Is Africa different? *Journal of African Development, 7*(1), 73-109.

Gyimah-Brempong, K., & Asiedu, E. (2008). *Aid and human capital formation: Some evidence.* Being a paper presented at the African Development Bank/United Nations Economic Commission for Africa on Globalization, Institutions, and Economic Development in Africa. Tunis, Tunisia (November).

Hair, J. F., Black, W. C., Babin, B. J., Anderson, R. E., & Tatham, R. L. (2006). *Multivariate data analysis (6th Ed.).* Upper Saddle River, NJ: prentice Hall.

Hansen, H., & Tarp, F. (2000). Aid effectiveness disputed. *Journal of International Development, 12*(3), 375-398.

Hansen, H., & Tarp, F. (2001). Aid and growth regressions. *Journal of Development Economics*, *64*, 547-570.
Harrigan, J., & Wang, C. (2011). A new approach to the allocation of aid among developing countries: Is the USA different from the rest? *World Development*, *39*(8), 1281-1293).
Hasan, S. (2007). Islamic concept of social justice: its possible contribution to ensuring harmony and peaceful coexistence in a globalized world. *Macquarie Law Journal*, *7*, 167-183.
Haque, M. E., & Kneller, R. (2007). *Public investment and growth: The role of corruption. Economic Studies.* The University of Manchester.
Headey, D. D. (2007). Geopolitics and the effect of foreign aid on economic growth: 1970-2001. *Journal of International Development*, *20*(2), 161-180.
Helga, K. (2007). Talking trade or talking aid? Does investment substitute for aid in the developing countries? *Institute of Economic Studies Working Paper Series W07:02*, University of Iceland.
Henderson, D. J., & Russell, R. (2005). Human capital and convergence: A production-frontier approach. *International Economic Review*, *46*(4), 1167-1205.
Hirvonen, P. (2005). Stingy samaritans: Why recent increases in development aid fail to help the poor. Retrieved on July 31, 2012 from http://www.globalpolicy.org/
Hoa, T. (2007). Foreign aid and development in Thailand" Causality and political economy. *Thammasat Economic Journal*, *25*(4), 127-154.
Holzner, M. (2010). *Inequality, growth and public spending in Central, East and Southeast Europe.* Working Papers 71. The Vienna Institute of International Economic Studies.
Huang, R., Fulginiti, L. E., & Peterson, E.W. (2010). Health and growth: Causality through education. *Chinese Agricultural Economic Review*, *2*(3), 1-34. Retrieved on August 17, 2011 from http://digitalcommons.unl.edu/ageconfapub/101
IDB (2004). *Thirty years of human development*. Jeddah.
IDB (2005). *Questions and answers.* Jeddah.
IDB (2006a). *Vision 1440H: A vision for human dignity*. Jeddah.
IDB (2006b). *Annual report 1426H (2005-2006).* Jeddah.
IDB (2007). *Capacity building for promoting trade and investment in Africa*. Jeddah.
IDB (2008a). *IDB and aid to member countries*. Retrieved on May 23, 2011 from http://www.isdb.org.
IDB (2008b). *Islamic Development Bank: Thirty-four years in the service of development.* Jeddah.
IDB (2008c). *Facts and figures on IDB member countries*. Jeddah.
IDB (2008d). *Eradicating malaria in IDB member countries in Africa.* Jeddah.
IDB (2008e). *Annual report 1428H/2007-2008.* Jeddah.
IDB (2009a). *Thirty-five years in the service of development*. Jeddah.
IDB (2009b). *Fostering intra-OIC FDI in the Agriculture sector. Occasional Paper No.14.* Jeddah.

IDB (2009c). *2009 key socio-economic statistics on IDB member countries. Statistical Monograph No. 29*. Jeddah.
IDB (2010). *Annual report 1431H/2010*. Jeddah.
IDB (2011a). *Islamic Development Bank Group in brief.* Jeddah.
IDB (2011b). *Thirty-seven years in the service of development.* Jeddah.
IDB (2011c). *The socio-economic indicators of IDB member countries.* Jeddah.
IMF (1995). Sub-Saharan Africa: Growth, savings and investment 1986-1993. *Occasional Paper 118*. Washington D. C.
IMF (2002). *International Financial Statistics Database*. Washington D. C.
IMF (2005). *Regional Economic Outlook: Sub-Saharan Africa*. Washington D. C.
IMF (2006). Regional Economic Outlook: Sub-Saharan Africa. *World Economic and Financial Surveys.* Washington D. C.
Iqbal, M., & Tariqullah, K. (2004). *Financing public expenditures in Muslim countries: New perspectives and prospects*. Occasional Paper, Islamic Research and training Institute, Islamic Development Bank, Jeddah.
Irandoust, M., & Ericson, J. (2005). Foreign aid, domestic savings and growth in LDCs: An application of likelihood-based panel co-integration. *Economic Modeling, 22*(4), 616-627.
Islam, M. N. (2003). Political regime and the effects of foreign aid on economic growth. *The Journal of Developing Areas*, *37*(1), 35-53.
Islam, N. (2005). Regime changes, economic policies and the effect of aid on growth. *The Journal of Development Studies*, *4*(8), 1467-1492.
Jones, C. I. (1996). *Human capital, ideas and economic growth.* Department of Economics, Stanford University, Stanford.
Jones, P. W., & Colman, D. (2005). *The United Nations and education: Multilateralism, development and globalization.* London: Routledge Falmer.
Joseph, F., Arthur, H. M., Samouel, P., & Mike, P. (2007). *Research methods for Business (2nd ed.)*. USA: Pearson Education.
Kabir Hassan, M. Sanchez, B., & Yu, J. (2011). Financial development and economic growth in the Organization of Islamic Conference. *JKAU: Islamic Economics, 24*(1), 145-172. doi:10.4197/Islec.24-1.6
Kaiser (2008). *HIV/AIDS Policy Factsheet.* Retrieved on March 23, 2011 from http:/www.kff.org/hivaids/upload/7365-065.pdf
Kalemli-Ozan, S. (2002). Does mortality decline promote economic growth? *Journal of Economic Growth, 7*(4), 411-439.
Kargbo, P. M. (2012). Impact of foreign aid on economic growth in Sierra Leone: Empirical Analysis. *UNU-WIDER Working Paper No. 2012/07.*
Kasekende, L. A. (2008). *Outlook for sustained economic growth in Africa: The case of IDB member countries*. Jeddah: IDB.
Kasuga, H. (2007). Evaluating the impacts of foreign direct investment, aid and saving in developing countries. *Journal of International Money and Finance, 26*, 213-228.
Kefela, G., & Rena, R. (2007). Human capital investment is a continuous proposition: A study of North African states. *Indus Journal of Management and Social Sciences*, *2*(1), 54-70. Retrieved on November 11, 2008 from http://mpra.ub.uni-muenchen.de/11090/

Kimenyi, M.S., & Mbaku, J.M. (2003). Institutions and economic growth. In: *Restarting and sustaining Economic Growth and Development in Africa* eds. by Kimenyi, M.S., Mbaku, J.M. & Mwaniki, N. Aldershot: Ashgate Publishing Limited.

Kremers, J., Ericsson, N., & Dolado, J. (1992). The power of cointegration tests. *Oxford Bulletin of Economics and Statistics, 54*, 325-343.

Kouakou, A. K. (2011). Economic growth and electricity consumption in Cote d'Ivoire: Evidence from time series analysis. *Energy Policy, 39*, 3638-3644. doi:10.1016/j.empol.2011.03.069

Lan, N. P. (2006). *Foreign direct investment and its linkage to economic growth in Vietnam: A provincial level analysis.* Centre for Regulation and Market Analysis, University of South Australia.

Lancaster, C. (1999). Aid effectiveness in Africa: The unfinished agenda. *Journal of African Economies*, *8*(4), 487-503.

Lawton, J. (1979). Arab aid: Who gives it? *Saudi Aramco World*, *30* (6).

Lensik, R., & White, H. (2001). Are there negative returns to aid? *Journal of Development Studies*, *37*(6), 42-65.

Levine, R. (1997). Financial development and economic growth: Views and agenda. *Journal of Economic Literature*, *32*(2), 688-726.

Levine, R., & Renelt, D. (1992). Sensitivity analysis of cross-country growth regressions. *American Economic Review*, *82*(4), 942-963.

Levy, V. (1987). Does concessionary Aid lead to higher Investment rates in low-income countries? *Review of Economics and Statistics*, *LXIX*, 152-156.

Li, Q., & Stengos, T. (1996). Semi-parametric estimation of partially linear panel data models. *Journal of Econometrics*, *71*, 389-397.

Li, X., & Liu, X. (2005). Foreign direct investment and economic growth. An increasingly endogenous relationship. *World Development*, *33*, 393-07.

Loxley, J., & Sackey, H. A. (2008), Aid effectiveness in Africa. *African Development Review*, *20*(2), 163-199. doi:10.1111/j.1467-8268.2008.00181.x

Lum, T., Fischer, H., Gomez-Granger, J., & Leland, A. (2009). *China's foreign aid activities in Africa, Latin America and Southeast Asia.* Congressional Research Service. Retrieved on June 15, 2011 from www.crs.gov

Mahathir, M. Dr. (1991). *Malaysia: The way forward*. Being a text of the working paper presented at the inaugural meeting of the Malaysian Business Council, Kuala Lumpur.

Mallik, G. (2008). Foreign aid and economic growth: A cointegration analysis of the six poorest African countries. *Economic Analysis & Policy*, 38 (2), 251-260.

Mankiw, G., Romer, D., & Weil, D. (1992). A contribution to the empirics of economic growth. *Quarterly Journal of Economics*, *107*, 407-437.

Marashdeh, H., & Shrestha, M. (2010). Stock market integration in the GCC countries. *International Research Journal of Finance and Economics*, *37*, 102-114.

Margitay-Becht, A. (2005). Agent based modeling of aid. *Interdisciplinary Description of Complex Systems, 3*(2), 84-93.

Masoud, T. (2011). The upheavals in Egypt and Tunisia: The road to (and from) Liberation Square. *Journal of Democracy, 22*(3), 20-34.

McGillivray, M., Fielding, D., Torres, S., & Knowles, S. (2011). Does aid work for the poor? *University of Otago Economic Discussion Papers No. 1114.*

Mcmillan, L. (2011). Foreign aid and economic development. *School of Doctoral Studies (European Union) Journal*, 158-165.

Meidan, M. (2006). China's Africa policy: Business now, politics later. *Asian Perspective, 30*(4), 69-93.

Minoiu, C., & Reddy, S.G. (2010). Development aid and economic growth. A positive long-run relation. *The Quarterly Review of Economics and Finance, 50*, 27-39. doi:10.1016/j.qref.2009.10.004

Mo, P. H. (2001). Corruption and economic growth. *Journal of Comparative Economics*, *29*, 66-79. doi:10.1006/jcec.2000.1703

Moreira, S. B. (2003). *Evaluating the impact of foreign aid in economic growth: A cross-country study (1970-1998).* A paper presented at the 15th Annual Meeting of Socio-Economics, France.

Moreira, E. P., & Bayraktar, N. (2008). Foreign aid, growth and poverty: A policy framework for Niger. *Journal of Policy Modeling, 30*, 523-539. doi:10.1016/j.jpolmod.2007.03.002

Mosley, P. (1980). Aid, savings and growth revisited. *Bulletin of Oxford Institute of Economics and Statistics*, *42*(2), 79-95.

Mosley, P., John, H., & Sara, H. (1987). Aid, the public sector and the market in Less Developed countries. *Economic Journal, 97*(87), 616-641.

Mustafa, D. (2009). Government expenditure and human capital development in Nigeria: Lessons from the Malaysian experience. *Bayero Business Review, 3*(1), 76-88.

Ndambendia, H., & Njoupougnigni, M. (2010). Foreign aid, foreign direct investment and economic growth in Sub-Saharan Africa. Evidence from pooled mean group estimator (PMG). *International Journal of Economics and Finance, 2*(3), 39-45.

Ndikumana, L. (2006). Revisiting development finance institutions for the purpose of accelerating African economic development. University of Massachusetts.

Nelson, D., & O'Keefe, C. (2010). *IOs as norms platforms: The World Bank's influence on environmental lending at the Islamic Development Bank.* 3rd Annual Conference on the Political Economy of International Organizations, January, 28.

Newlyn, W. (1990). Aid, the public sector and the market in Less Developed countries: A note. *The Economic Journal, 100*, 220-230.

Nyarko, Y. (2009). *EU policies and African human capital development.* New York University. A ERD EU conference paper in Accra, Ghana on May 21-23.

OECD (2002a). *Statistical annex of the 2002 Development Cooperation Report.* Paris.

OECD (2002b). *Geographical distribution of financial flows of Developing countries.* International Development Statistics (IDS) online Database. Paris.

OECD (2008). *OECD annual report.* Paris.
OECD (2011). *Basic indicators for African countries*. Retrieved on January 27, 2012 from www.oecd.org.
Ogun, T. (2010). Infrastructure and poverty reduction: Implications for urban development in Nigeria. *UNU-WIDER Working Paper No. 2010/43*.
Olakunle, O. A. (2004). *Research methods in Social Sciences (2nd ed.).* Norway: D-Net Communications E-Book Press.
Olorunfemi, J. F., & Jimoh, A. (2005). Methods of data collection in Social Sciences. In Saliu, Oyebanji & Jimoh, Basic *Issues in Research Methodology (ed.).* Ilorin: Faculty of Business and Social Sciences, University of Ilorin.
Osinubi, T. S., & Amaghionyeodiwe, L. A. (2010). Foreign private investment and economic growth in Nigeria. *Review of Economic & Business Studies, 3*(1), 105-127.
Pack, H., & Pack, J.R. (1994). Foreign aid and the question of fungibility. *Review of Economics and Statistics, 75*, 258-265.
Papanek, G. F. (1973). The effect of aid and other resource transfers on savings and growth of Less Developed countries. *Economic Journal, 82*(327), 934-950.
Pesaran, H. & Pesaran, B. (1997). *Microfit 4.0.* Oxford: Oxford University Press.
Pesaran, M., Shin, Y., & Smith, R.P. (1999). Pooled mean group estimation of dynamic heterogeneous panels. *Journal of American Statistical Association, 94*, 621-634.
Pramanik, A. H. (2003). Development strategy and its implications for unity in the Muslim World. *The American Journal of Islamic Social Sciences, 20*(1), 63-87.
Pramanik, A. H., & Nik Hassan, N. M. (1991). *Development and finance in Islam(ed.).* Selangor: International Islamic University Press.
Quartey, P. (2005). Innovative ways of making aid effective in Ghana: Tied aid versus direct budgetary support. *Journal of International Development*, 17, 1092.
Quazi, R. M. (2005). Effects of foreign aid on GDP growth and fiscal behavior: An econometric case study of Bangladesh. *The Journal of Developing Areas, 38*(2), 95-117.
Rajan, R. G., & Subramanian, A. (2005a). What undermines aid's impact on growth? *IMF Working Paper 05/126.* Washington: IMF.
Rajan, R. G., & Subramanian, A. (2005b). Aid and growth: What does the cross-country evidence really show*? IMF Working Paper 05/127*. Washington: IMF.
Raji, A. F. (2001). *Foreign aid: A tool for African underdevelopment (A case study of Nigeria).* An unpublished M.A. Dissertation, Faculty of Arts, Lagos State University.
Ram, R. (2003). Roles of bilateral and multilateral aid in economic growth of Developing Countries. *KYKLOS. 56*(1), 95-110.
Rena, R. (2008). *Brain drain and brain gain in Africa.* Online at: Africa Economic Analysis website.
Riddell, R.C. (2007). *Does foreign aid really work?* New York: Oxford University Press.

Roemer, M. (1989). Macroeconomics of counterpart funds. *World Development, 17*, 795-808.
Rogoff, K. S. (2003). Unlocking growth in Africa. *Finance and Development, 40*(2), 56.
Romer, P. M. (1986). Increasing returns to long-run growth. *Journal of Political Economy. 94*, 1002-10037.
Romer, P. M. (1993). Idea gaps and object gaps in economic development. *Journal of Monetary Economics, 32*(3), 543-574.
Roodman, D. (2007). The anarchy of numbers: Aid, development and cross-country empirics. *The World Bank Economic Review, 21*(2). 255-277. doi:10.1093/wber/lhm004
Rotberg, R. (2004). Leadership in Africa. *Chimera USA/Africa Institute*, *2*(2), 9-12.
Rotberg, R. (2006). Renewing good leadership: Overcoming the scourges of Africa. *Africa Policy Journal, 1*.
Sadeq, A. M. (1990). *Economic development in Islam*. Selangor: Pelanduk Publications.
Sadeq, A. M. (2006). Poverty and poverty alleviation. In Sadeq, A. M. (ed.) *Development Issues in Islam.* Kuala Lumpur: International Islamic University Malaysia.
Salisu, A. A. (2007). *Aid, policy and growth: Evidence from Sub-Saharan Africa.* Being a paper submitted to the Global Development Network (GDN) in respect of 2007 Global Development Awards and Medals Competition.
Sanusi, S. L. (2011). *Nigeria's high poverty level*. Retrieved on February 25, 2012 from http://www.dailytrust.com/index
Saudi Arabia Information (2008, October 29). *Developmental cooperation with Islamic countries*.
Schnitzer, M. C. (1997). *Comparative Economic Systems (7th Ed.)*. Ohio: South-Western College Publishing.
Sekaran, U. (2000). *Research Methods for Business (3rd Ed.)*. Canada: John Wiley & Sons, Inc.
Securities Commission Malaysia (2009). Islamic Commercial Law (*Fiqh Al-Muamalat*). Kuala Lumpur: LexisNexis.
Shah, A. (2008). *US and foreign aid assistance – Global issues.* Retrieved on February 16, 2009 from http://www.globalissues.org/print/article/35
Shah, S. A. H., Ahmad, I., & Zahid, M. S. (2005). Is foreign aid necessary for the economic development of Less Developed countries with special reference to Pakistan? *IPRI Journal, V*(2), 1-27.
Siddiqui, R. (2009). *Human capital versus physical capital: A cross-country analysis of human development strategies*. Islamabad: Institute of Development Economics.
Solow, R. (1956). A contribution to the theory of economic growth. *Quarterly Journal of Economics, 70*(1), 65-94.
Sowell, T. (2005, July 12). The tragedy of Africa: Foreign aid and debt forgiveness. *Capitalism Magazine*.
Sullivan, P. L., Tessman, B. F., & Li, X. (2011). US military aid and recipient state cooperation. *Foreign Policy Analysis, 7*, 275-294. doi:10.1111/j.1743-8594.2011.00138.x

Svensson, J. (2000). Foreign aid and rent-seeking. *Journal of International Economics, 51*(2), 437-461.
Svensson, J. (2003). Why conditional aid doesn't work and what can be done about it? *Journal of Development Economics, 70*(2), 381-402.
Tanzi, V. & Davoodi, H. (1997). Corruption, public investment and growth. *IMF Working Paper No. WP/97/139.*
Tax Justice Network (2008). Six hundred billion drained from Africa. Retrieved on January 22, 2009 from www.taxjustice.net.
Todaro, M. P., & Smith, S. C. (2009). *Economic Development (Tenth ed.).* England: Pearson Education Limited.
Transparency International (2008). Corruption Perceptions Index 2008. Retrieved on December 29, 2011 from www.transparency.org
Transparency International (2010). Corruption Perceptions Index 2010. Retrieved on December 29, 2011 from www.transparency.org
Transparency International (2011). Corruption Perceptions Index 2011. Retrieved on December 29, 2011 from www.transparency.org
UNDP (2010). *Human Development Report*. Retrieved on August 19, 2010 from www.hdr.undp.org/en/reports/global/hdr2010.
United Nations (2006). *The Millennium Development Goals report*. New York.
United Nations (2007). *World Investment Report 2007: Transnational corporations, extractive industries and development.* New York.
USAID (2004). Economic growth in the Muslim world: How can USAID help*? Bureau for Policy and Program Coordination*. Washington D. C.
USAID (2006). *Policy framework for bilateral foreign aid.* Washington D. C.
Van De Walle, D., & Mu, R. (2007). Fungibility and flypaper effect of aid: Micro-evidence for Vietnam. *Journal of Development Economics, 84*, 667-685.
Vivodas, C. S. (1973). Exports, foreign capital inflow and economic growth. *Journal of International Economics. 3*(4). 817-838.
Waheed, A. (2004). Foreign capital inflows and economic growth of developing countries: A critical survey of selected empirical studies. *Journal of Economic Cooperation, 25*(1), 1-36.
Weiss, J. (2008). The aid paradigm of poverty reduction: Does it make sense. *Development Policy Review*, *26*(4), 407-426.
Werlin, H. H. (2005). Corruption and foreign aid in Africa. *Orbis*, Summer.
White, H. (1992). Should we expect aid to increase economic growth? *Working Paper No. 127.* Institute of Social Studies, The Hague, Netherlands.
Williams, W. (2003, August 12). Africa tragic continent. *Capitalism Magazine.*
Williams, W. (2005, July 12). Freedom, not foreign aid for Africa. *Capitalism Magazine.*
Williams, S. (2005). *Capital flight.* Retrieved from African Business website.
Wooldridge, J. M. (2009). *Introductory econometrics: A modern approach (4th ed.).* South-Western: CENGAGE Learning.
World Bank (1998). *Assessing aid: What works, what doesn't and why?* Washington D. C.
World Bank (2000). *Can Africa claim the 21st century?* Washington D. C.
World Bank (2001). *Goals for development: History, prospects and costs: Preliminary draft.* Washington D. C.

World Bank (2002a). The costs of attaining the Millennium Development Goals, *Report.* Washington D. C.

World Bank (2002b). *A case for aid: Building a consensus for development assistance*. Washington D. C.

World Bank (2008). *Addressing Africa's infrastructure needs.* Retrieved on February 23, 2011 from http://go.worldbank.org/UER8YNUR0

World Bank (2010). *Various data* Retrieved on October 29, 2011 from http://data.worldbank.org/topic.

Yasin, M. (2005). *Official development assistance and foreign direct investment flows to Sub-Saharan Africa*. African Development Bank.

Zellner, A. (2006). *Seemingly unrelated regressions.* Prepared for the International Encyclopedia of Social Sciences. University of Chicago.

Zellner, A., & Theil, H. (1962). Three-stage least squares: Simultaneous estimation of simultaneous equations. *Econometrica, 30*(1), 54-78.

Appendix A

Table 6.1:
IDB Member Countries and Date of Membership

S/N	Country	Official Name	Membership Date	
			Hijra	*Gregorian*
1	Afghanistan	Afghanistan	26.10.1396H	**(20.10.1976)**
2	Albania	Republic of Albania	04.03.1414H	**(21.08.1994)**
3	Algeria*	Democratic and Popular Republic of Algeria	24.07.1394H	**(12.08.1974)**
4	Azerbaijan	Azerbaijan Republic	04.01.1413H	**(04.07.1992)**
5	Bahrain	Kingdom of Bahrain	06.10.1394H	**(21.10.1974)**
6	Bangladesh	People's Republic of Bangladesh	24.07.1394H	**(12.08.1974)**
7	Benin	Republic of Benin	01.06.1404H	**(03.03.1984)**
8	Brunei	Negara Brunei Darussalam	24.07.1406H	**(03.04.1986)**
9	Burkina Faso*	Burkina Faso	06.04.1398H	**(15.03.1978)**
10	Cameroon	Republic of Cameroon	09.04.1397H	**(28.03.1977)**
11	Chad*	Republic of Chad	06.04.1397H	**(26.03.1977)**
12	Comoros*	Union of Comoros	24.04.1400H	**(11.03.1980)**
13	Côte d'Ivoire	Côte d'Ivoire	21.04.1423H	**(02.07.2002)**
14	Djibouti*	Republic of Djibouti	24.04.1400H	**(11.03.1980)**
15	Egypt*	Arab Republic of Egypt	27.07.1394H	**(12.08.1974)**
16	Gabon	Republic of Gabon	27.04.1401H	**(03.03.1981)**
17	Gambia*	Republic of the Gambia	24.04.1400H	**(11.03.1980)**
18	Guinea*	Republic of Guinea	24.07.1394H	**(12.08.1974)**
19	Guinea Bissau	Republic of Guinea Bissau	16.12.1398H	**(16.11.1978)**
20	Indonesia	Republic of Indonesia	24.07.1394H	**(12.08.1974)**
21	Iran	Islamic Republic of Iran	16.07.1409H	**(22.02.1989)**

22	Iraq	Republic of Iraq	19.10.1398H	**(23.09.1978)**
23	Jordan	Hashemite Kingdom of Jordan	24.07.1394H	**(12.08.1974)**
24	Kazakhstan	Republic of Kazakhstan	08.07.1416H	**(30.11.1995)**
25	Kuwait	State of Kuwait	24.07.1394H	**(12.08.1974)**
26	Kyrgyz	Kyrgyz Republic	19.05.1414H	**(03.11.1993)**
27	Lebanon	Republic of Lebanon	09.04.1397H	**(28.03.1977)**
28	Libya*	Great Socialist People's Libyan Arab Jamahiriyah	06.08.1394H	**(24.08.1974)**
29	Malaysia	Malaysia	24.07.1394H	**(12.08.1974)**
30	Maldives	Republic of Maldives	24.04.1400H	**(11.03.1980)**
31	Mali*	Republic of Mali	06.04.1398H	**(15.03.1978)**
32	Mauritania*	Islamic Republic of Mauritania	24.07.1394H	**(12.08.1974)**
33	Morocco*	Kingdom of Morocco	24.07.1394H	**(12.08.1974)**
34	Mozambique	Republic of Mozambique	08.07.1416H	**(30.11.1995)**
35	Niger*	Republic of Niger	24.07.1394H	**(12.08.1974)**
36	Nigeria*	Republic of Nigeria	08.05.1426H	**(15.06.2005)**
37	Oman	Sultanate of Oman	24.07.1394H	**(12.08.1974)**
38	Pakistan	Islamic Republic of Pakistan	24.07.1394H	**(12.08.1974)**
39	Palestine	State of Palestine	07.07.1397H	**(23.06.1977)**
40	Qatar	State of Qatar	24.07.1394H	**(12.08.1974)**
41	Saudi Arabia	Kingdom of Saudi Arabia	24.07.1394H	**(12.08.1974)**
42	Senegal*	Republic of Senegal	28.11.1396H	**(20.11.1976)**
43	Sierra Leone*	Republic of Sierra Leone	01.08.1402H	**(24.05.1982)**
44	Somalia*	Republic of Somalia	24.07.1394H	**(12.08.1974)**
45	Sudan*	Republic of Sudan	24.07.1394H	**(12.08.1974)**
46	Suriname	Republic of Suriname	02.01.1418H	**(08.05.1997)**
47	Syria	Syrian Arab Republic	04.09.1395H	**(09.09.1975)**

48	Tajikistan	Republic of Tajikistan	16.07.1417H	**(27.11.1996)**
49	Togo	Republic of Togo	29.07.1419H	**(18.11.1998)**
50	Tunisia*	Republic of Tunisia	24.07.1394H	**(12.08.1974)**
51	Turkey	Republic of Turkey	24.07.1394H	**(12.08.1974)**
52	Turkmenistan	Republic of Turkmenistan	12.06.1415H	**(15.11.1994)**
53	Uganda	Republic of Uganda	09.04.1397H	**(28.03.1977)**
54	U.A.E.	United Arab Emirates	24.07.1394H	**(12.08.1974)**
55	Uzbekistan	Republic of Uzbekistan	05.07.1424H	**(02.09.2003)**
56	Yemen	Republic of Yemen	19.07.1395H	(28.07.1975)

Source: IDB (2005) and IDB (2008b).

Note: *Denotes the 19 African Muslim Countries (AMCs) used as the sample countries in this study.

Appendix B

Table 6.2:

Cumulative Development Assistance of IDB to AMCs from 1976-2010 (values in US$ million)

Country	Project Financing	Technical Asst.	Trade Financing	Special Asst.	Grand Total
Algeria*	591.7	4.0	1887.7	5.6	2489.1
Burkina Faso**	347.0	12.6	206.1	8.8	574.5
Chad**	312.3	6.3	3.2	10.8	332.5
Comoros**	11.1	4.9	7.5	1.1	24.5
Djibouti**	242.9	3.7	12.0	2.3	260.9
Egypt*	907.8	3.9	2323.4	1.5	3236.7
Gambia**	165.2	4.5	103.0	1.8	274.6
Guinea**	327.9	10.7	48.8	7.8	395.2
Libya*	386.0	3.3	299.8	3.8	692.8
Mali*	446.5	12.0	199.8	16.5	674.9
Mauritania*	523.4	23.0	84.5	11.1	642.0
Morocco*	1619.7	5.5	2389.3	1.5	4016.0
Niger**	271.6	14.5	138.3	12.2	436.6
Nigeria**	90.5	0.3	205.0	7.9	303.7
Senegal*	588.7	11.3	272.6	14.2	886.8
Sierra Leone**	121.8	7.1	5.0	3.6	137.5
Somalia**	24.1	4.0	46.2	13.3	87.6
Sudan*	1065.8	5.4	372.4	23.5	1467.0
Tunisia*	757.2	2.5	1094.9	4.2	2208.6
Net Approval	**9,051**	**139.5**	**9,799.5**	**151.5**	**19,141.5**

Source: Extracted from IDB Annual Report 1431H/2010.

Note:*refers to the topmost recipient countries while ** connotes the least recipient countries.

Appendix C

Table 6.3:
Socio-Economic Indicators of IDB Member Countries

Indicators	**Unit**	**2008**	**2009**	**2010**
Population	Billion	1.50	1.52	1.55
Population Growth	%	1.91	1.94	1.91
Adult Illiteracy	%	31.9	29.1	27.6
Life Expectancy	Year	64.4	64.7	64.9
Health Expenditure /GDP	%	4.3	4.7	4.9
Youth Dependency Ratio	%	58.2	57.2	56.4
Human Development Index	Value	0.507	0.511	0.516
Current GDP	$ billion	4,593	4,142	4,802
Real GDP Growth	%	4.5	2.0	5.3
Per Capita GNI (Atlas Method)	$	2,371	2,479	2,680
Inflation (CPI)	%	12.0	7.0	7.1
Gross Fixed Capital Formation/GDP	%	23.9	24.2	24.6
Merchandise Exports	$ billion	1,888	1,264	1,202
Merchandise Imports	$ billion	1,512	1,215	1,242
Current Account Balance /GDP	%	8.5	2.4	2.8
Gross Reserves	$ billion	1,355	1,364	1,463
Reserves in months of Imports	Months	12.1	13.8	16.0
Total External Debt	$ billion	1,436	1,485	1,575
Debt Service/Merchandise Exports	%	7.9	13.2	15.0
Intra-IDB Exports/Total Exports	%	14.0	15.8	17.0
Intra-IDB Imports/Total Imports	%	19.1	17.8	18.0
Net Resource Flows	$ billion	86.7	66.2	51.0
Net FDI	$ billion	170.8	126.5	118.0

Source: Adapted from IDB (2011c).

Appendix D

Table 6.4:
Countries in the Muslim World

Middle East and North Africa (18)
Algeria*
Bahrain
Egypt*
Iran
Iraq
Jordan
Kuwait
Lebanon
Libya*
Morocco*
Oman
Qatar
Saudi Arabia
Syria
Tunisia *
United Arab Emirates
West Bank/Gaza
Yemen

Europe and Eurasia (7)
Albania
Azerbaijan
Kyrgyzstan
Tajikistan
Turkey
Turkmenistan
Uzbekistan

South Asia (4)
Afghanistan
Bangladesh
Maldives
Pakistan

East Asia and Pacific (3)
Brunei
Indonesia
Malaysia

Africa (16)
Burkina Faso*
Comoros*
Chad*
Djibouti*
Eritrea
Ethiopia
Gambia*
Guinea*
Mali*
Mauritania*
Niger*
Nigeria*
Senegal*
Sierra Leone*
Somalia*
Sudan*

Source: USAID (2004).
Note: *The 19 African Muslim Countries (AMCs) used as sample.

Appendix E

Table 6.5:
Least Developed Member Countries (LDMCs) as Per IDB Classification (Human Development Indicators for 2005)

S/N	COUNTRY	HPI VALUE	RANK	HDI VALUE	RANK
1.	Afghanistan	n.a	n.a	n.a	n.a
2.	Albania	n.a	n.a	0.801	68
3.	Azerbaijan	n.a	n.a	0.746	98
4.	Bangladesh	40.5	93	0.547	140
5.	Benin*	47.6	100	0.437	163
6.	Burkina Faso*	55.8	106	0.370	176
7.	Chad*	56.9	108	0.388	170
8.	Comoros*	31.3	61	0.561	134
9.	Djibouti*	28.5	59	0.516	149
10.	Gambia*	40.9	86	0.502	155
11.	Guinea*	52.3	103	0.456	160
12.	Guinea-Bissau*	44.8	99	0.374	175
13.	Kyrgyz Republic	n.a	n.a	0.696	116
14.	Maldives	17.0	42	0.741	100
15.	Mali*	56.4	107	0.380	173
16.	Mauritania*	39.2	87	0.550	137
17.	Mozambique*	50.6	101	0.384	172
18.	Niger*	54.7	104	0.374	174
19.	Palestine	6.6	9	0.731	106
20.	Senegal*	42.9	97	0.499	156
21.	Sierra-Leone*	51.7	102	0.336	177
22.	Somalia*	n.a	n.a	n.a	n.a
23.	Sudan*	34.4	69	0.526	147
24.	Tajikistan	n.a	n.a	0.673	122
25.	Togo*	38.1	83	0.512	152
26.	Uganda*	34.7	72	0.505	154
27.	Uzbekistan	n.a	n.a	0.702	113
28.	Yemen Republic	38.0	82	0.508	153

Source: Extracted from IDB (2008c).
Note: n.a implies data is not available. * The asterisk means African countries that are beneficiaries of the LDMCs Initiative (13 AMCs are beneficiaries).

Appendix F

Table 6.6:
The 34 Member Countries of OECD

S/N	COUNTRY	YEAR OF MEMBERSHIP
1.	Australia	1971
2.	Austria	1961
3.	Belgium	1961
4.	Canada	1961
5.	Chile	2010
6.	Czech Republic	1995
7.	Denmark	1961
8.	Estonia	2010
9.	Finland	1969
10.	France	1961
11.	Germany	1961
12.	Greece	1961
13.	Hungary	1996
14.	Iceland	1961
15.	Ireland	1961
16.	Israel	2010
17.	Italy	1961
18.	Japan	1964
19.	Korea	1996
20.	Luxembourg	1961
21.	Mexico	1994
22.	Netherlands	1961
23.	New Zealand	1973
24.	Norway	1961
25.	Poland	1996
26.	Portugal	1961
27.	Slovak Republic	2000
28.	Slovenia	2010
29.	Spain	1961
30.	Sweden	1961
31.	Switzerland	1961
32.	Turkey*	1961
33.	United Kingdom	1961
34.	United States	1961

Source: Adapted from OECD (2011).
Note: *Only Turkey is a Muslim country

Appendix G

Table 6.7:
List of Multilateral Aid Donors and UN Agencies

S/N	AGENCIES/DONORS	DESCRIPTION
A.	**Multilateral Donors**	
1.	African Dev. Bank	African Development Bank
2.	Asian Dev. Bank	Asian Development Bank
3.	CariBank	Caribbean Development Bank
4.	EBRD	European Bank for reconstruction and Development
5.	GEF	Global Environment Facility
6.	Global Fund	The Global Fund to fight AIDS, Tuberculosis and Malaria
7.	IBRD & IDA (World Bank)	International Bank for Reconstruction and Development (gives ODF); International Development Association (gives ODA)
8.	IDB*	Inter-American Development Bank
9.	IMF (SAF, ESAF, PRGF)	International Monetary Fund (Gives aid loans called Structural Adjustment Facilities (SAF), Extended SAF and Poverty Reduction and Growth Facilities)
10.	Nordic Dev. Fund	Nordic Development Fund (Gives grants for climate change)
B.	**United Nations (UN) Agencies**	
1.	IFAD	International Fund for Agricultural Development
2.	UNAIDS	United Nations Joint Program on HIV/AIDS
3.	UNDP	United Nations Development Program
4.	UNFPA	United Nations Population Fund
5.	UNHCR	United Nations High Commissioner for Refugees
6.	UNICEF	United Nations Children's Fund
7.	UNIFEM	United Nations Development Fund for Women
8.	UNRWA	United Nations Relief and Work Agency for Palestine Refugees in the Near East
9.	UNTA	United Nations Technical Assistance
10.	WFP (UN)	World Food Program

Source: Adapted from Easterly and Williamson (2011).
Note: *It was established in 1959 with 48 countries as current members.

Appendix H

Table 6.8:
Descriptive Analysis for the Major variables (1987-2010)

Correlation	**Growth**	**AID**	**Investment**	**Human Capital**
Mean	1.738	51.655	19.863	80.930
Median	1.885	14.115	20.405	77.500
Maximum	33.629	1141.840	59.723	164.200
Minimum	-18.690	-0.300	-23.763	13.800
Std. Dev.	4.778	106.595	7.935	34.831
Skewness	0.716	5.151	-0.077	0.208
Kurtosis	11.373	41.281	8.672	2.465
Jarque-Bera	1010.141	22002.25	450.807	6.431
Probability	0.000	0.000	0.000	0.040
Observations	336	336	336	336

Source: Author's Computation

Appendix I

Table 6.9:
Detail Results of Three-Stage Least Squares

```
       Equation 1: 3SLS estimates using the 56 observations
       Dependent variable: Growth
Instruments: l_Initial_Y l_pcgdp const l_AID l_inflation l_prisch

              coefficient   std. error   t-ratio    p-value
-------------------------------------------------------------
const           33.7049      286.948      0.1175    0.9065
l_inv           -1.33750      23.7130    -0.05640   0.9550
l_Infmort       -3.90912      33.6041    -0.1163    0.9074
l_Initial_Y    -23.6955       19.9214    -1.189     0.2343
l_pcgdp         21.7498       30.3824     0.7159    0.4741

Mean dependent var   1.737540   S.D. dependent var   2.568711
Sum squared resid    234.2571   S.E. of regression   2.045278
R-squared            0.354495   Adjusted R-squared   0.303867

Equation 2: 3SLS estimates using the 56 observations
Dependent variable: l_inv
Instruments: l_Initial_Y l_pcgdp const l_AID l_inflation l_prisch

                coefficient    std. error   t-ratio    p-value
-----------------------------------------------------------------
const           2.39410       0.752287      3.182     0.0015  ***
l_Infmort      -0.00345306    0.152670     -0.02262   0.9820
l_AID           0.170425      0.0525608     3.242     0.0012  ***
growth         -0.000558860   0.0255170    -0.02190   0.9825
l_inflation     0.0172516     0.0164572     1.048     0.2945

Mean dependent var   2.923758   S.D. dependent var   0.393553
Sum squared resid    5.144734   S.E. of regression   0.303101
R-squared            0.396061   Adjusted R-squared   0.348693

Equation 3: 3SLS estimates using the 56 observations
Dependent variable: l_Infmort
Instruments: l_Initial_Y l_pcgdp const l_AID l_inflation l_prisch

          coefficient   std. error   t-ratio   p-value
-----------------------------------------------------------
const      -21.0015      10.4332      -2.013    0.0441  **
l_inv       12.4203       5.71782      2.172    0.0298  **
growth       0.0891474    0.138128     0.6454   0.5187
l_prisch    -0.978087     0.873726    -1.119    0.2630
l_AID       -2.30275      0.904616    -2.546    0.0109  **

Mean dependent var   4.280970   S.D. dependent var   0.515525
Sum squared resid    817.1170   S.E. of regression   3.819866
R-squared           -54.901295   Adjusted R-squared  -59.28571

Cross-equation VCV for residuals
correlations above the diagonal)
 4.1832      (0.412)     (-0.403)
 0.25558     0.091870     (-0.994)
-3.1502      -1.1512       14.591

log determinant = -2.93563
Hansen-Sargan over-identification test:
Chi-square(3) = 1.20974 [0.7507]
```

Appendix J

Table 6.10:
Detail Results of Ordinary Least Squares

```
Equation 1: OLS estimates using the 56 observations
Dependent variable: Growth

              coefficient   std. error   t-ratio   p-value
-------------------------------------------------------------
const           3.93181      7.06170      0.5568   0.5801
l_inv           1.62671      0.694556     2.342    0.0231   **
l_Infmort      -0.569526     0.878256    -0.6485   0.5196
l_Initial_Y   -23.4356       3.53288     -6.634    2.06e-08 ***
l_pcgdp        22.5776       3.63607      6.209    9.62e-08 ***

Mean dependent var   1.737540   S.D. dependent var   2.568711
Sum squared resid    158.8590   S.E. of regression   1.764903
R-squared            0.562257   Adjusted R-squared   0.527925

Equation 2: OLS estimates using the 56 observations
Dependent variable: l_inv

             coefficient   std. error   t-ratio   p-value
-------------------------------------------------------------
const          2.82267      0.562269      5.020    6.67e-06 ***
l_Infmort     -0.0902047    0.111024     -0.8125   0.4203
l_AID          0.137578     0.0418772     3.285    0.0018   ***
growth         0.0264247    0.0174911     1.511    0.1370
l_inflation    0.0146506    0.0435424     0.3365   0.7379

Mean dependent var   2.923758   S.D. dependent var   0.393553
Sum squared resid    4.862237   S.E. of regression   0.308768
R-squared            0.429223   Adjusted R-squared   0.384457

Equation 3: OLS estimates using the 56 observations
Dependent variable: l_Infmort

          coefficient   std. error   t-ratio    p-value
-------------------------------------------------------------
const       7.38479      0.575341     12.84     1.35e-017 ***
l_inv      -0.0759218    0.148033     -0.5129   0.6103
growth      0.0157449    0.0182101     0.8646   0.3913
l_prisch   -0.569758     0.123707     -4.606    2.77e-05  ***
l_AID      -0.160372     0.0426210    -3.763    0.0004    ***

Mean dependent var   4.280970   S.D. dependent var   0.515525
Sum squared resid    5.467204   S.E. of regression   0.327414
R-squared            0.625973   Adjusted R-squared   0.596638

Cross-equation VCV for residuals
correlations above the diagonal)

 2.8368     (-0.127)     (-0.069)
-0.063136     0.086826      (0.090)
-0.036409    0.0083013     0.097629

log determinant = -3.75567
Breusch-Pagan test for diagonal covariance matrix:
Chi-square(3) = 1.62958 [0.6527]
```

Appendix K

Table 6.11:
Detail Results of Seemingly Unrelated Regressions

```
Equation 1: SUR estimates using the 56 observations
Dependent variable: Growth

              coefficient   std. error   t-ratio    p-value
-------------------------------------------------------------
const         -0.450449     6.68084     -0.06742   0.9465
l_inv          2.29029      0.658408     3.479     0.0010   ***
l_Infmort     -0.100939     0.831953    -0.1213    0.9039
l_Initial_Y   -22.6668       3.35137     -6.763     1.29e-08 ***
l_pcgdp        21.8830       3.44771      6.347     5.84e-08 ***

Mean dependent var   1.737540   S.D. dependent var   2.568711
Sum squared resid    162.0756   S.E. of regression   1.701237
R-squared            0.553394   Adjusted R-squared   0.518366

Equation 2: SUR estimates using the 56 observations
Dependent variable: l_inv

              coefficient   std. error   t-ratio   p-value
-------------------------------------------------------------
const        3.17226      0.533110      5.950    2.45e-07 ***
l_Infmort   -0.159455     0.105344     -1.514    0.1363
l_AID        0.114497     0.0396423     2.888    0.0057   ***
growth       0.0379989    0.0166105     2.288    0.0263   **
l_inflation  0.0127491    0.0410769     0.3104   0.7575

Mean dependent var   2.923758   S.D. dependent var   0.393553
Sum squared resid    4.937909   S.E. of regression   0.296946
R-squared            0.420340   Adjusted R-squared   0.374877

Equation 3: SUR estimates using the 56 observations
Dependent variable: l_Infmort

              coefficient   std. error   t-ratio    p-value
-------------------------------------------------------------
const         7.56914      0.546904     13.84     6.70e-019 ***
l_inv        -0.177379     0.140642     -1.261     0.2130
growth        0.0242896    0.0173540     1.400     0.1677
l_prisch     -0.554694     0.117574     -4.718     1.89e-05  ***
l_AID        -0.149413     0.0405382    -3.686     0.0006    ***

Mean dependent var   4.280970   S.D. dependent var   0.515525
Sum squared resid    5.530372   S.E. of regression   0.314256
R-squared            0.621652   Adjusted R-squared   0.591977

Cross-equation VCV for residuals
correlations above the diagonal)

 2.8942     (-0.318)     (-0.195)
-0.16056     0.088177      (0.260)
-0.10409     0.024269     0.098757

log determinant = -3.87241
Hansen-Sargan over-identification test:
Chi-square(3) = 26.0025 [0.0000]
```

Appendix L

Table 6.12:
Detail Results of OLS for Hypothesis 4

Model 1: Pooled OLS estimates using 42 observations
Included 14 cross-sectional units
Time-series length = 3
Dependent variable: Growth

	Coefficient	*Std. Error*	*t-ratio*	*p-value*	
Const	-0.340854	0.894859	-0.3809	0.70540	
l_AID	0.990196	0.383834	2.5797	0.01388	**
Dummy	-1.94728	0.959743	-2.0290	0.04951	**
growth_1	0.220346	0.139049	1.5847	0.12133	

Mean dependent var	2.146058	S.D. dependent var	2.483275
Sum squared resid	167.5375	S.E. of regression	2.099734
R-squared	0.337359	Adjusted R-squared	0.285045
F(3, 38)	6.448754	P-value(F)	0.001226
Log-likelihood	-88.64971	Akaike criterion	185.2994
Schwarz criterion	192.2501	Hannan-Quinn	187.8471
Rho	-0.228052	Durbin-Watson	2.085001

Model 2: Pooled OLS estimates using 42 observations
Included 14 cross-sectional units
Time-series length = 3
Dependent variable: l_inv
Robust (HAC) standard errors

	Coefficient	*Std. Error*	*t-ratio*	*p-value*	
Const	1.49875	0.411765	3.6398	0.00081	***
l_AID	0.122738	0.0379639	3.2330	0.00253	***
Dummy	-0.0344049	0.072171	-0.4767	0.63630	
l_inv_1	0.378894	0.153072	2.4753	0.01789	**

Mean dependent var	2.954325	S.D. dependent var	0.364843
Sum squared resid	2.408894	S.E. of regression	0.251778
R-squared	0.558611	Adjusted R-squared	0.523764
F(3, 38)	16.03061	P-value(F)	6.82e-07
Log-likelihood	0.433119	Akaike criterion	7.133762
Schwarz criterion	14.08444	Hannan-Quinn	9.681461
Rho	0.113589	Durbin-Watson	1.320751

Appendix M
Addendum ARDL Results for Morocco

Table 6.13:
ARDL Results (AID as Dependent Variable)

Variables	**Long-run Estimates**
Constant	-.655 (771.739)
Corruption	.584 (839.627)
Growth	.730 (897.553)
Inflation	.333 (278.738)

Notes: The figures in the parenthesis are the standard errors. The null hypothesis is no granger causality. With the exception of growth all other variables are in the natural logarithmic form. The estimation period is from 1997-2009.

Table 6.14:
Diagnostic Test Results

Test Statistics	**F-test**
Serial Correlation	F (4, 17) = 1.033 [.417]
Functional Form	F (1, 20) = .085 [.774]
Normality	N/A
Heteroscedasticity	F (1, 43) = .247 [.988]

Notes: The first figures in the parenthesis are the degrees of freedom. The null hypothesis is no serial correlation, correct functional form and no heteroscedaticity respectively.

Appendix N
Addendum ARDL Results for Egypt

Table 6.15:
ARDL Results (AID as Dependent Variable)

Variables	**Long-run Estimates**
Constant	-2.864** (44.943)
Corruption	3.359*** (10.629)
Growth	3.990*** (13.528)
Inflation	.4.411*** (2.661)

Notes: The figures in the parenthesis are the standard errors. The null hypothesis is no granger causality. With the exception of growth all other variables are in the natural logarithmic form. The estimation period is from 1997-2009.

Table 6.16:
Diagnostic Test Results

Test Statistics	**F-test**
Serial Correlation	F (4, 6) = 1.940 = [.223]
Functional Form	F (1, 9) = .861 [.676]
Normality	N/A
Heteroscedasticity	F (1, 42) = .943 [.337]

Notes: The first figures in the parenthesis are the degrees of freedom. The null hypothesis is no serial correlation, correct functional form and heteroscedaticity respectively.

Appendix O
Addendum ARDL Results for Tunisia

Table 6.17:
ARDL Results (AID as Dependent Variable)

Variables	**Long-run Estimates**
Constant	-1.468 (9.985)
Corruption	2.957*** (18.445)
Growth	2.085** (13.528)
Inflation	.158 (18.816)

Notes: The figures in the parenthesis are the standard errors. The null hypothesis is no granger causality. With the exception of growth all other variables are in the natural logarithmic form. The estimation period is from 1997-2009.

Table 6.18:
Diagnostic Test Results

Test Statistics	**F-test**
Serial Correlation	F (4, 40) = .689 [.604]
Functional Form	F (1, 43) = .138 [.712]
Normality	N/A
Heteroscedasticity	F (1, 47) = 2.204 [.144]

Notes: The first figures in the parenthesis are the degrees of freedom. The null hypothesis is no serial correlation, correct functional form and heteroscedaticity respectively.

Appendix P
Addendum ARDL Results for Senegal

Table 6.19:
ARDL Results (AID as Dependent Variable)

Variables	**Long-run Estimates**
Constant	-2.166 (2.884)
Corruption	2.564** (5.350)
Growth	-.621 (2.835)
Inflation	-1.194 (3.093)

Notes: The figures in the parenthesis are the standard errors. The null hypothesis is no granger causality. With the exception of growth all other variables are in the natural logarithmic form. The estimation period is from 1997-2009.

Table 6.20:
Diagnostic Test Results

Test Statistics	**F-test**
Serial Correlation	F (4, 40) = .532 [.713]
Functional Form	F (1, 43) = .014 [.907]
Normality	N/A
Heteroscedasticity	F (1, 47) = .219 [.642]

Notes: The first figures in the parenthesis are the degrees of freedom. The null hypothesis is no serial correlation, correct functional form and heteroscedaticity respectively.

Appendix Q
Addendum ARDL Results for Nigeria

Table 6.21:
ARDL Results (AID as Dependent Variable)

Variables	**Long-run Estimates**
Constant	-1.954* (.989)
Corruption	2.112** (2.504)
Growth	-1.759* (.227)
Inflation	2.149** (.312)

Notes: The figures in the parenthesis are the standard errors. The null hypothesis is no granger causality. With the exception of growth all other variables are in the natural logarithmic form. The estimation period is from 1997-2009.

Table 6.22:
Diagnostic Test Results

Test Statistics	**F-test**
Serial Correlation	F (4, 19) = 2.212 [.106]
Functional Form	F (1, 22) = 2.249 [.148]
Normality	N/A
Heteroscedasticity	F (1, 43) = 2.004 [.164]

Notes: The first figures in the parenthesis are the degrees of freedom. The null hypothesis is no serial correlation, correct functional form and heteroscedaticity respectively.

Appendix R

Table 6.23:
Detail Results of ARDL Estimates for Morocco

```
                    Variable Addition Test (OLS case                        (
*******************************************************************************
 Dependent variable is DA
 List of the variables added to the regression                                :
 A(-1)           C(-1)           G(-1)           I(-1                         (
 44 observations used for estimation from 1999Q1 to 2009Q4
*******************************************************************************
 Regressor              Coefficient       Standard Error         T-Ratio[Prob [
 INPT                     -40.6239           26.5059           -1.5326[.154 [
 DA(-1)                    -.42960            .18365           -2.3392[.039 [
 DA(-2)                    -.51751            .20669           -2.5038[.029 [
 DA(-3)                    -.38300            .22533           -1.6998[.117 [
 DA(-4)                    -.63887            .22756           -2.8074[.017 [
 DA(-5)                    -.92446            .20090           -4.6015[.001 [
 DA(-6)                    -.62847            .15387           -4.0843[.002 [
 DA(-7)                    -.81609            .17424           -4.6838[.001 [
 DC(-1)                    -9.8030           57.7773           -.16967[.868 [
 DC(-2)                    30.7482           65.6805            .46815[.649 [
 DC(-3)                     8.1495           75.0206            .10863[.915 [
 DC(-4)                   344.6422           71.3376            4.8311[.001 [
 DC(-5)                   331.4329           82.5952            4.0127[.002 [
 DC(-6)                   324.4116           83.3365            3.8928[.003 [
 DC(-7)                   351.1750           61.1315            5.7446[.000 [
 DG(-1)                  -113.8884           24.1102           -4.7237[.001 [
 DG(-2)                  -104.4856           21.5032           -4.8591[.001 [
 DG(-3)                  -113.5796           18.9733           -5.9863[.000 [
 DG(-4)                   -43.9165           13.4321           -3.2695[.007 [
 DG(-5)                   -50.5453           11.3971           -4.4349[.001 [
 DG(-6)                   -38.0795            9.7490           -3.9060[.002 [
 DG(-7)                   -48.6053            9.3734           -5.1854[.000 [
 DI(-1)                    14.7272           23.0917            .63777[.537 [
 DI(-2)                   -12.9597           21.2343           -.61032[.554 [
 DI(-3)                   -12.6935           20.2042           -.62826[.543 [
 DI(-4)                     2.3647           18.6136            .12704[.901 [
 DI(-5)                    -6.8239           14.4802           -.47125[.647 [
 DI(-6)                    -.76566           14.8524          -.051551[.960 [
 DI(-7)                    14.5604           15.5235            .93796[.368 [
 A(-1)                     -.38082            .11156           -3.4137[.006 [
 C(-1)                      5.2690           37.0585            .14218[.890 [
 G(-1)                    114.7548           25.5200            4.4967[.001 [
 I(-1)                     26.6595           25.1630            1.0595[.312 [
*******************************************************************************
 Joint test of zero restrictions on the coefficients of additional variables  :
 Lagrange Multiplier Statistic     CHSQ( 4)=  33.8794[.000                    [
 Likelihood Ratio Statistic        CHSQ( 4)=  64.6631[.000                    [
 F Statistic                   F(  4,  11)=   9.2058[.002                    [
*******************************************************************************
```

CONT'D

```
                    Variable Addition Test (OLS case                      (
*****************************************************************************
 Dependent variable is DC
 List of the variables added to the regression                            :
 A(-1)          C(-1)          G(-1)          I(-1                        (
 44 observations used for estimation from 1999Q1 to 2009Q4
*****************************************************************************
 Regressor             Coefficient       Standard Error         T-Ratio[Prob [
 INPT                    -.045639            .12801            -.35653[.728 [
 DC(-1)                   -.74283            .27904            -2.6621[.022 [
 DC(-2)                   -.53406            .31720            -1.6837[.120 [
 DC(-3)                    .27874            .36231             .76934[.458 [
 DC(-4)                    1.7551            .34453             5.0942[.000 [
 DC(-5)                    1.8258            .39889             4.5771[.001 [
 DC(-6)                    1.5185            .40247             3.7730[.003 [
 DC(-7)                    .79938            .29523             2.7076[.020 [
 DA(-1)                   .6173E-3          .8869E-3            .69599[.501 [
 DA(-2)                   .0012307          .9982E-3            1.2329[.243 [
 DA(-3)                  -.0019787          .0010882           -1.8183[.096 [
 DA(-4)                  -.0032291          .0010990           -2.9382[.013 [
 DA(-5)                  -.0019968          .9703E-3           -2.0581[.064 [
 DA(-6)                  -.0025790          .7431E-3           -3.4705[.005 [
 DA(-7)                   .5589E-3          .8415E-3            .66418[.520 [
 DG(-1)                   -.40730            .11644            -3.4980[.005 [
 DG(-2)                   -.42363            .10385            -4.0793[.002 [
 DG(-3)                   -.29974           .091632            -3.2711[.007 [
 DG(-4)                   -.20832           .064870            -3.2114[.008 [
 DG(-5)                   -.18753           .055042            -3.4069[.006 [
 DG(-6)                   -.21047           .047083            -4.4703[.001 [
 DG(-7)                  -.042415           .045269            -.93696[.369 [
 DI(-1)                  -.078514            .11152            -.70403[.496 [
 DI(-2)                  .0056507            .10255            .055101[.957 [
 DI(-3)                   -.15566           .097576            -1.5953[.139 [
 DI(-4)                  -.035680           .089894            -.39691[.699 [
 DI(-5)                   .081851           .069932             1.1704[.267 [
 DI(-6)                  -.079808           .071730            -1.1126[.290 [
 DI(-7)                   -.12111           .074971            -1.6154[.135 [
 A(-1)                  -.0019077          .5388E-3            -3.5410[.005 [
 C(-1)                    -.16603            .17897            -.92769[.373 [
 G(-1)                     .37483            .12325             3.0412[.011 [
 I(-1)                     .14012            .12152             1.1530[.273 [
*****************************************************************************
 Joint test of zero restrictions on the coefficients of additional variables  :
 Lagrange Multiplier Statistic     CHSQ( 4)=  31.0527[.000                    [
 Likelihood Ratio Statistic        CHSQ( 4)=  53.8254[.000                    [
 F Statistic                  F(  4,  11)=   6.5956[.006                    [
*****************************************************************************
```

CONT'D

```
                    Variable Addition Test (OLS case                      (
*****************************************************************************
 Dependent variable is DG
 List of the variables added to the regression                             :
 A(-1)          C(-1)          G(-1)          I(-1                         (
 48 observations used for estimation from 1998Q1 to 2009Q4
*****************************************************************************
 Regressor             Coefficient       Standard Error         T-Ratio[Prob [
 INPT                      .84513             .61498             1.3742[.179 [
 DG(-1)                    .48988             .14231             3.4424[.002 [
 DG(-2)                    .51822             .15114             3.4288[.002 [
 DG(-3)                    .37352             .15224             2.4534[.020 [
 DA(-1)                  .0034311           .0044444              .77201[.446 [
 DA(-2)                 -.0029426           .0043487             -.67666[.504 [
 DA(-3)                 -.0021334           .0039455             -.54072[.593 [
 DC(-1)                   -.19799             1.0176             -.19458[.847 [
 DC(-2)                   -.29306             .58674             -.49948[.621 [
 DC(-3)                   -.59369             .67802             -.87563[.388 [
 DI(-1)                   -.16936             .42291             -.40047[.692 [
 DI(-2)                   -.14370             .44130             -.32562[.747 [
 DI(-3)                   -.33291             .48811             -.68203[.500 [
 A(-1)                  -.0011305           .0034738             -.32543[.747 [
 C(-1)                    -.71744             1.0470             -.68526[.498 [
 G(-1)                    -1.1087             .18207             -6.0890[.000 [
 I(-1)                     .28174             .54861              .51355[.611 [
*****************************************************************************
 Joint test of zero restrictions on the coefficients of additional variables  :
 Lagrange Multiplier Statistic     CHSQ( 4)=  27.8544[.000                    [
 Likelihood Ratio Statistic        CHSQ( 4)=  41.6743[.000                    [
 F Statistic                   F(  4,  31)=  10.7156[.000                    [
```

```
                    Variable Addition Test (OLS case                      (
*****************************************************************************
 Dependent variable is DI
 List of the variables added to the regression                             :
 A(-1)          C(-1)          G(-1)          I(-1                         (
 48 observations used for estimation from 1998Q1 to 2009Q4
*****************************************************************************
 Regressor             Coefficient       Standard Error         T-Ratio[Prob [
 INPT                      .48555             .27432             1.7700[.087 [
 DI(-1)                    .54835             .18864             2.9068[.007 [
 DI(-2)                    .51847             .19685             2.6338[.013 [
 DI(-3)                   .092182             .21773              .42338[.675 [
 DA(-1)                -.1255E-3           .0019825           -.063287[.950 [
 DA(-2)                 -.0028285           .0019398            -1.4581[.155 [
 DA(-3)                 -.0014941           .0017600            -.84894[.402 [
 DC(-1)                    .28319             .45389             .62391[.537 [
 DC(-2)                   -.10043             .26172             -.38373[.704 [
 DC(-3)                    .025285             .30244             .083602[.934 [
 DG(-1)                  .0030053            .063478             .047344[.963 [
 DG(-2)                  -.033989            .067417             -.50417[.618 [
 DG(-3)                  -.010861            .067909             -.15993[.874 [
 A(-1)                  .3176E-4           .0015495             .020499[.984 [
 C(-1)                    -.47861             .46701             -1.0248[.313 [
 G(-1)                   -.031459            .081217             -.38735[.701 [
 I(-1)                    -.84135             .24471             -3.4381[.002 [
*****************************************************************************
```

```
Joint test of zero restrictions on the coefficients of additional variables  :
 Lagrange Multiplier Statistic     CHSQ( 4)=  15.8957[.003                    [
 Likelihood Ratio Statistic        CHSQ( 4)=  19.3062[.001                    [
 F Statistic                  F(  4,  31)=   3.8372[.012                    [
*******************************************************************************

            Autoregressive Distributed Lag Estimates
          ARDL(4,5,5,6) selected based on R-BAR Squared Criterion
*******************************************************************************
 Dependent variable is A
 45 observations used for estimation from 1998Q4 to 2009Q4
*******************************************************************************
 Regressor              Coefficient       Standard Error         T-Ratio[Prob [
 A(-1)                      .14722            .15412             .95524[.350 [
 A(-2)                     .031182            .15266             .20426[.840 [
 A(-3)                      .15025            .14043             1.0699[.297 [
 A(-4)                      .57211            .13078             4.3746[.000 [
 C                         116.7704           54.8200            2.1301[.045 [
 C(-1)                     113.4643           58.2623            1.9475[.065 [
 C(-2)                      26.1265           23.6185            1.1062[.281 [
 C(-3)                      1.1836            24.1487           .049012[.961 [
 C(-4)                     -103.3775          50.5852           -2.0436[.054 [
 C(-5)                     -105.5243          53.7981           -1.9615[.063 [
 G                          7.9883            9.2544             .86319[.398 [
 G(-1)                      14.4500           10.0050            1.4443[.163 [
 G(-2)                      3.2393            5.7019             .56811[.576 [
 G(-3)                      4.4705            5.5056             .81200[.426 [
 G(-4)                      25.8482           7.1021             3.6395[.002 [
 G(-5)                      8.9923            7.1335             1.2606[.221 [
 I                          20.5869           13.8050            1.4913[.151 [
 I(-1)                      7.6070            16.5924            .45846[.651 [
 I(-2)                     -27.7462           17.9558           -1.5452[.137 [
 I(-3)                      4.7925            20.2341            .23685[.815 [
 I(-4)                      22.6275           17.5129            1.2920[.210 [
 I(-5)                     -57.4726           19.9655           -2.8786[.009 [
 I(-6)                      38.8300           16.2085            2.3957[.026 [
 INPT                      -50.1442           26.7452           -1.8749[.075 [
*******************************************************************************
 R-Squared                     .92520   R-Bar-Squared                   .84328
 S.E. of Regression          15.1402   F-stat.    F( 23,  21)   11.2933[.000 [
 Mean of Dependent Variable  32.6056   S.D. of Dependent Variable     38.2439
 Residual Sum of Squares      4813.7   Equation Log-likelihood      -168.9849
 Akaike Info. Criterion     -192.9849  Schwarz Bayesian Criterion   -214.6648
 DW-statistic                  1.8919
*******************************************************************************
```

Diagnostic Tests

*Test Statistics	LM Version	F Version
*A:Serial Correlation	CHSQ(4)= 8.7987[.066]	F(4, 17)= 1.0330[.417
*B:Functional Form	CHSQ(1)= .19025[.663]	F(1, 20)= .084912[.774
*C:Normality	CHSQ(2)= 1.3987[.497]	Not applicable
*D:Heteroscedasticity	CHSQ(1)= .2584E-3[.987]	F(1, 43)= .2469E-3[.988

A:Lagrange multiplier test of residual serial correlation
B:Ramsey's RESET test using the square of the fitted values
C:Based on a test of skewness and kurtosis of residuals
D:Based on the regression of squared residuals on squared fitted values

Estimated Long Run Coefficients using the ARDL Approach
ARDL(4,5,5,6) selected based on R-BAR Squared Criterion

Dependent variable is A
45 observations used for estimation from 1998Q4 to 2009Q4

Regressor	Coefficient	Standard Error	T-Ratio[Prob [
C	490.1491	839.6266	.58377[.566 [
G	654.8561	897.5525	.72960[.474 [
I	92.9550	278.7383	.33348[.742 [
INPT	-505.2756	771.7391	-.65472[.520 [

Estimated Long Run Coefficients using the ARDL Approach
ARDL(7,7,4,7) selected based on R-BAR Squared Criterion

Dependent variable is C
45 observations used for estimation from 1998Q4 to 2009Q4

Regressor	Coefficient	Standard Error	T-Ratio[Prob [
G	-.32587	.22742	-1.4329[.171 [
I	.62103	.33878	1.8332[.085 [
A	-.0026043	.0015123	-1.7221[.104 [
INPT	.59502	.10066	5.9113[.000 [

Ordinary Least Squares Estimation

Dependent variable is DA
48 observations used for estimation from 1998Q1 to 2009Q4

Regressor	Coefficient	Standard Error	T-Ratio[Prob [
INPT	3.5991	3.5716	1.0077[.321 [
DA(-1)	-.69362	.17117	-4.0523[.000 [
DA(-2)	-.66124	.17665	-3.7432[.001 [
DA(-3)	-.50533	.17333	-2.9155[.006 [
DC(-1)	-7.1081	28.5686	-.24881[.805 [
DC(-2)	-25.3255	11.4146	-2.2187[.033 [
DC(-3)	9.3494	28.4294	.32886[.744 [
DG(-1)	-23.9958	6.3011	-3.8082[.001 [
DG(-2)	-21.3920	6.6986	-3.1935[.003 [
DG(-3)	-13.3607	6.8429	-1.9525[.059 [
DI(-1)	35.3899	15.7691	2.2443[.031 [
DI(-2)	15.7782	17.0968	.92287[.363 [
DI(-3)	-5.1586	15.5922	-.33084[.743 [
ECA(-1)	-.031167	.011078	-2.8135[.008 [

```
********************************************************************************
 R-Squared                        .72136   R-Bar-Squared                    .61483
 S.E. of Regression             24.2096   F-stat.    F( 13,  34)    6.7710[.000 [
 Mean of Dependent Variable      1.3415   S.D. of Dependent Variable     39.0085
 Residual Sum of Squares        19927.6   Equation Log-likelihood       -212.7968
 Akaike Info. Criterion       -226.7968   Schwarz Bayesian Criterion    -239.8953
 DW-statistic                    1.6628
********************************************************************************


                              Diagnostic Tests
********************************************************************************
    *Test Statistics  *        LM Version        *         F Version*
********************************************************************************
*                             *                           *                      *
 *A:Serial Correlation*CHSQ(   4)=   7.2432[.124]*F(   4,  30)=   1.3329[.281*[
*                             *                           *                      *
 *B:Functional Form   *CHSQ(   1)=   .36284[.547]*F(   1,  33)=   .25135[.619*[
*                             *                           *                      *
 *C:Normality         *CHSQ(   2)=   .31985[.852]*       Not applicable*
*                             *                           *                      *
 *D:Heteroscedasticity*CHSQ(   1)=  .030021[.862]*F(   1,  46)=  .028788[.866*[
********************************************************************************
   A:Lagrange multiplier test of residual serial correlation
   B:Ramsey's RESET test using the square of the fitted values
   C:Based on a test of skewness and kurtosis of residuals
   D:Based on the regression of squared residuals on squared fitted values

            Wald test of restriction(s) imposed on parameters
********************************************************************************
 Based on  OLS regression of DA on                                             :
 INPT           DA(-1)          DA(-2)          DA(-3)          DC(-1        (
 DC(-2)         DC(-3)          DG(-1)          DG(-2)          DG(-3        (
 DI(-1)         DI(-2)          DI(-3)          ECA(-1                       (
 48 observations used for estimation from 1998Q1 to 2009Q4
********************************************************************************
 Coefficients A1 to A14 are assigned to the above regressors respectively     .
 List of restriction(s) for the Wald test                                     :


 a5=0; a6=0; a7=0



********************************************************************************
 Wald Statistic                CHSQ( 3)=   6.5607[.087                        [



********************************************************************************
            Wald test of restriction(s) imposed on parameters
********************************************************************************
 Based on  OLS regression of DA on                                             :
 INPT           DA(-1)          DA(-2)          DA(-3)          DC(-1        (
 DC(-2)         DC(-3)          DG(-1)          DG(-2)          DG(-3        (
 DI(-1)         DI(-2)          DI(-3)          ECA(-1                       (
 48 observations used for estimation from 1998Q1 to 2009Q4
********************************************************************************
 Coefficients A1 to A14 are assigned to the above regressors respectively     .
 List of restriction(s) for the Wald test                                     :
```

```
 a8=0; a9=0; a10=0

*****************************************************************************
 Wald Statistic                CHSQ( 3)=  19.2668[.000                      [


*****************************************************************************

              Wald test of restriction(s) imposed on parameters
*****************************************************************************
 Based on  OLS regression of DA on                                           :
 INPT           DA(-1)          DA(-2)          DA(-3)          DC(-1        (
 DC(-2)         DC(-3)          DG(-1)          DG(-2)          DG(-3        (
 DI(-1)         DI(-2)          DI(-3)          ECA(-1                       (
 48 observations used for estimation from 1998Q1 to 2009Q4
*****************************************************************************
 Coefficients A1 to A14 are assigned to the above regressors respectively     .
 List of restriction(s) for the Wald test                                   :


 a11=0; a12=0; a13=0


*****************************************************************************
 Wald Statistic                CHSQ( 3)=   6.4966[.090                      [


*****************************************************************************

              Wald test of restriction(s) imposed on parameters
*****************************************************************************
 Based on  OLS regression of DA on                                           :
 INPT           DA(-1)          DA(-2)          DA(-3)          DC(-1        (
 DC(-2)         DC(-3)          DG(-1)          DG(-2)          DG(-3        (
 DI(-1)         DI(-2)          DI(-3)          ECA(-1                       (
 48 observations used for estimation from 1998Q1 to 2009Q4
*****************************************************************************
 Coefficients A1 to A14 are assigned to the above regressors respectively     .
 List of restriction(s) for the Wald test                                   :

                 a14=0


*****************************************************************************
 Wald Statistic                CHSQ( 1)=   7.9160[.005                      [


*****************************************************************************
```

Ordinary Least Squares Estimation

Dependent variable is DC
48 observations used for estimation from 1998Q1 to 2009Q4

Regressor	Coefficient	Standard Error	T-Ratio[Prob [
INPT	-.0045583	.013427	-.33948[.736 [
DC(-1)	-.63788	.11699	-5.4524[.000 [
DC(-2)	-.89409	.054935	-16.2753[.000 [
DC(-3)	-.73767	.10528	-7.0064[.000 [
DA(-1)	.6638E-3	.6473E-3	1.0254[.312 [
DA(-2)	.6977E-3	.6756E-3	1.0326[.309 [
DA(-3)	.4436E-3	.6519E-3	.68048[.501 [
DG(-1)	.020616	.023112	.89200[.379 [
DG(-2)	-.0028192	.024247	-.11627[.908 [
DG(-3)	.032765	.024013	1.3644[.181 [
DI(-1)	-.036187	.067403	-.53688[.595 [
DI(-2)	-.040458	.070203	-.57631[.568 [
DI(-3)	-.046974	.067620	-.69468[.492 [
ECC(-1)	-.20066	.086518	-2.3193[.027 [

R-Squared	.98087	R-Bar-Squared	.97355
S.E. of Regression	.090481	F-stat. F(13, 34)	134.0670[.000 [
Mean of Dependent Variable	-.0013184	S.D. of Dependent Variable	.55633
Residual Sum of Squares	.27835	Equation Log-likelihood	55.4929
Akaike Info. Criterion	41.4929	Schwarz Bayesian Criterion	28.3945
DW-statistic	1.6708		

Diagnostic Tests

*Test Statistics *	LM Version	F Version*
A:Serial Correlation	CHSQ(4)= 10.0146[.040]*	F(4, 30)= 1.9773[.123]*
*B:Functional Form *	CHSQ(1)= 1.2265[.268]*	F(1, 33)= .86535[.359]*
*C:Normality *	CHSQ(2)= 3.1461[.207]*	Not applicable*
D:Heteroscedasticity	CHSQ(1)= 1.8777[.171]*	F(1, 46)= 1.8727[.178]*

A:Lagrange multiplier test of residual serial correlation
B:Ramsey's RESET test using the square of the fitted values
C:Based on a test of skewness and kurtosis of residuals
D:Based on the regression of squared residuals on squared fitted values

Wald test of restriction(s) imposed on parameters

Based on OLS regression of DC on :
INPT DC(-1) DC(-2) DC(-3) DA(-1 (
DA(-2) DA(-3) DG(-1) DG(-2) DG(-3 (
DI(-1) DI(-2) DI(-3) ECC(-1 (
48 observations used for estimation from 1998Q1 to 2009Q4

Coefficients A1 to A14 are assigned to the above regressors respectively .
List of restriction(s) for the Wald test :

```
 a5=0; a6=0; a7=0


*******************************************************************************
 Wald Statistic                CHSQ( 3)=   1.5228[.677                       [


*******************************************************************************

              Wald test of restriction(s) imposed on parameters
*******************************************************************************
 Based on  OLS regression of DC on                                            :
 INPT            DC(-1)          DC(-2)          DC(-3)          DA(-1        (
 DA(-2)          DA(-3)          DG(-1)          DG(-2)          DG(-3        (
 DI(-1)          DI(-2)          DI(-3)          ECC(-1                       (
 48 observations used for estimation from 1998Q1 to 2009Q4
*******************************************************************************
 Coefficients A1 to A14 are assigned to the above regressors respectively     .
 List of restriction(s) for the Wald test                                     :


 a8=0; a9=0; a10=0


*******************************************************************************
 Wald Statistic                CHSQ( 3)=   2.4505[.484                       [


*******************************************************************************

              Wald test of restriction(s) imposed on parameters
*******************************************************************************
 Based on  OLS regression of DC on                                            :
 INPT            DC(-1)          DC(-2)          DC(-3)          DA(-1        (
 DA(-2)          DA(-3)          DG(-1)          DG(-2)          DG(-3        (
 DI(-1)          DI(-2)          DI(-3)          ECC(-1                       (
 48 observations used for estimation from 1998Q1 to 2009Q4
*******************************************************************************
 Coefficients A1 to A14 are assigned to the above regressors respectively     .
 List of restriction(s) for the Wald test                                     :


 a11=0; a12=0; a13=0


*******************************************************************************
 Wald Statistic                CHSQ( 3)=   .85302[.837                       [


*******************************************************************************
```

```
              Wald test of restriction(s) imposed on parameters
*******************************************************************************
 Based on  OLS regression of DC on                                             :
 INPT            DC(-1)          DC(-2)          DC(-3)          DA(-1        (
 DA(-2)          DA(-3)          DG(-1)          DG(-2)          DG(-3        (
 DI(-1)          DI(-2)          DI(-3)          ECC(-1                       (
 48 observations used for estimation from 1998Q1 to 2009Q4
*******************************************************************************
 Coefficients A1 to A14 are assigned to the above regressors respectively     .
 List of restriction(s) for the Wald test                                     :


 a14=0


*******************************************************************************
 Wald Statistic                CHSQ( 1)=   5.3791[.020                       [


*******************************************************************************
```

Appendix S

Table 6.24:
Detail Results of ARDL for Egypt

```
                      Variable Addition Test (OLS case                      (
*****************************************************************************
 Dependent variable is DA
 List of the variables added to the regression                               :
 G(-1)           I(-1)           C(-1)           A(-1                        (
 43 observations used for estimation from 1999Q2 to 2009Q4
*****************************************************************************
 Regressor             Coefficient       Standard Error         T-Ratio[Prob [
 DA(-1)                    3.4246            1.2523             2.7346[.034 [
 DA(-2)                    2.6250            1.1920             2.2022[.070 [
 DA(-3)                    2.8613            .97957             2.9209[.027 [
 DA(-4)                    1.7619            .93532             1.8837[.109 [
 DA(-5)                    1.0527            .53531             1.9665[.097 [
 DA(-6)                    1.0404            .47918             2.1712[.073 [
 DA(-7)                    1.9138            .53576             3.5721[.012 [
 DA(-8)                    .65936            .58634             1.1245[.304 [
 DI(-1)                  -34.2081           13.1677            -2.5979[.041 [
 DI(-2)                    6.4740           13.7875             .46956[.655 [
 DI(-3)                   -8.1825           11.5537            -.70822[.505 [
 DI(-4)                   -8.5927           13.1701            -.65244[.538 [
 DI(-5)                   20.0977           15.0586             1.3346[.230 [
 DI(-6)                  -14.5548           12.8731            -1.1306[.301 [
 DI(-7)                  -38.6043           13.5657            -2.8457[.029 [
 DI(-8)                  -20.5330           15.4947            -1.3252[.233 [
 DC(-1)                   -1768.7          744.7456            -2.3749[.055 [
 DC(-2)                   -1171.7          714.7958            -1.6393[.152 [
 DC(-3)                   -1032.5          517.2482            -1.9961[.093 [
 DC(-4)                  -711.6072          451.6320            -1.5756[.166 [
 DC(-5)                  -576.6707          299.1238            -1.9279[.102 [
 DC(-6)                  -406.2086          253.9936            -1.5993[.161 [
 DC(-7)                  -915.9601          198.3726            -4.6174[.004 [
 DC(-8)                  -312.9234          256.6581            -1.2192[.269 [
 DG(-1)                    94.3508           34.3228             2.7489[.033 [
 DG(-2)                   -43.4532           29.6875            -1.4637[.194 [
 DG(-3)                    36.9240           39.7319             .92933[.389 [
 DG(-4)                   -35.8262           37.7401            -.94929[.379 [
 DG(-5)                  -155.6370           49.9056            -3.1186[.021 [
 DG(-6)                   -55.2862           55.0607            -1.0041[.354 [
 DG(-7)                    12.0899           31.6073             .38250[.715 [
 DG(-8)                    44.7921           28.1042             1.5938[.162 [
 INPT                    -430.2928          331.8790            -1.2965[.242 [
 G(-1)                   -139.1399           49.9225            -2.7871[.032 [
 I(-1)                     27.4663           19.0359             1.4429[.199 [
 C(-1)                      1249.6          777.8494             1.6065[.159 [
 A(-1)                     -4.1542            1.5589            -2.6648[.037 [
*****************************************************************************
 Joint test of zero restrictions on the coefficients of additional variables  :
 Lagrange Multiplier Statistic     CHSQ( 4)=  33.1392[.000                    [
 Likelihood Ratio Statistic        CHSQ( 4)=  63.3230[.000                    [
 F Statistic                   F(  4,   6)=   5.0410[.040                    [
*****************************************************************************
```

CONT'D

Variable Addition Test (OLS case (

Dependent variable is DC
List of the variables added to the regression :
G(-1) I(-1) C(-1) A(-1 (
44 observations used for estimation from 1999Q1 to 2009Q4

Regressor	Coefficient	Standard Error	T-Ratio[Prob [
INPT	-.64261	.42560	-1.5099[.159 [
DC(-1)	-2.2219	.82400	-2.6965[.021 [
DC(-2)	-1.8887	.61284	-3.0819[.010 [
DC(-3)	-1.6629	.54944	-3.0265[.012 [
DC(-4)	-.92646	.35496	-2.6100[.024 [
DC(-5)	-.91117	.31258	-2.9149[.014 [
DC(-6)	-1.0143	.24147	-4.2004[.001 [
DC(-7)	-.83309	.25623	-3.2514[.008 [
DG(-1)	.075358	.054503	1.3826[.194 [
DG(-2)	.064300	.062438	1.0298[.325 [
DG(-3)	.057002	.078345	.72758[.482 [
DG(-4)	-.15880	.077144	-2.0585[.064 [
DG(-5)	-.15692	.065675	-2.3893[.036 [
DG(-6)	-.11037	.065710	-1.6797[.121 [
DG(-7)	-.026101	.061547	-.42409[.680 [
DI(-1)	-.041321	.022701	-1.8202[.096 [
DI(-2)	-.024145	.021880	-1.1035[.293 [
DI(-3)	-.024374	.022224	-1.0968[.296 [
DI(-4)	-.9968E-3	.024766	-.040248[.969 [
DI(-5)	.0061641	.020160	.30577[.765 [
DI(-6)	-.015863	.020353	-.77937[.452 [
DI(-7)	-.032121	.021748	-1.4770[.168 [
DA(-1)	.0041477	.0011603	3.5748[.004 [
DA(-2)	.0040173	.8228E-3	4.8824[.000 [
DA(-3)	.0033467	.7798E-3	4.2917[.001 [
DA(-4)	.0020698	.5653E-3	3.6614[.004 [
DA(-5)	.0017608	.5440E-3	3.2368[.008 [
DA(-6)	.0022688	.5136E-3	4.4179[.001 [
DA(-7)	.0022602	.4760E-3	4.7484[.001 [
G(-1)	-.17020	.051089	-3.3313[.007 [
I(-1)	.062228	.022213	2.8014[.017 [
C(-1)	1.7126	.94260	1.8168[.097 [
A(-1)	-.0050044	.0013653	-3.6653[.004 [

Joint test of zero restrictions on the coefficients of additional variables :
Lagrange Multiplier Statistic CHSQ(4)= 32.0704[.000 [
Likelihood Ratio Statistic CHSQ(4)= 57.4275[.000 [
F Statistic F(4, 11)= 7.3929[.004 [

```
                    Variable Addition Test (OLS case                      (
*************************************************************************
 Dependent variable is DG
 List of the variables added to the regression                            :
 G(-1)          I(-1)          C(-1)          A(-1                        (
 44 observations used for estimation from 1999Q1 to 2009Q4
*************************************************************************
 Regressor             Coefficient       Standard Error         T-Ratio[Prob [
 INPT                      7.0239            2.4704             2.8432[.016 [
 DG(-1)                    .41997            .31636             1.3275[.211 [
 DG(-2)                    1.0826            .36242             2.9870[.012 [
 DG(-3)                    .62144            .45475             1.3665[.199 [
 DG(-4)                    1.4363            .44778             3.2076[.008 [
 DG(-5)                    1.2771            .38121             3.3502[.006 [
 DG(-6)                    .50475            .38142             1.3233[.213 [
 DG(-7)                    .32378            .35725             .90633[.384 [
 DI(-1)                   -.11877            .13177            -.90132[.387 [
 DI(-2)                   -.26459            .12700            -2.0833[.061 [
 DI(-3)                   -.28428            .12900            -2.2037[.050 [
 DI(-4)                   -.48779            .14376            -3.3932[.006 [
 DI(-5)                   -.37872            .11702            -3.2365[.008 [
 DI(-6)                   -.34392            .11814            -2.9111[.014 [
 DI(-7)                   -.30507            .12623            -2.4167[.034 [
 DC(-1)                   11.9811            4.7829             2.5050[.029 [
 DC(-2)                    9.3471            3.5572             2.6276[.024 [
 DC(-3)                    6.3508            3.1892             1.9913[.072 [
 DC(-4)                    3.2871            2.0604             1.5954[.139 [
 DC(-5)                    2.2644            1.8144             1.2480[.238 [
 DC(-6)                    .87386            1.4016             .62345[.546 [
 DC(-7)                    1.1071            1.4873             .74439[.472 [
 DA(-1)                 -.011892          .0067347            -1.7657[.105 [
 DA(-2)                -.0081636          .0047760            -1.7093[.115 [
 DA(-3)                -.0076078          .0045264            -1.6808[.121 [
 DA(-4)                -.0041575          .0032812            -1.2670[.231 [
 DA(-5)                -.8931E-3          .0031576            -.28284[.783 [
 DA(-6)                -.9478E-3          .0029809            -.31796[.756 [
 DA(-7)                -.0023515          .0027629            -.85112[.413 [
 G(-1)                   -.66965            .29655            -2.2582[.045 [
 I(-1)                  -.089614            .12894            -.69502[.501 [
 C(-1)                  -15.1455            5.4713            -2.7682[.018 [
 A(-1)                   .017739          .0079251             2.2383[.047 [
*************************************************************************
 Joint test of zero restrictions on the coefficients of additional variables  :
 Lagrange Multiplier Statistic     CHSQ( 4)=  22.5131[.000                    [
 Likelihood Ratio Statistic        CHSQ( 4)=  31.5368[.000                    [
 F Statistic                  F(  4,  11)=   2.8813[.074                    [
*************************************************************************

                    Variable Addition Test (OLS case                      (
*************************************************************************
 Dependent variable is DI
 List of the variables added to the regression                            :
 G(-1)          I(-1)          C(-1)          A(-1                        (
 44 observations used for estimation from 1999Q1 to 2009Q4
*************************************************************************
 Regressor             Coefficient       Standard Error         T-Ratio[Prob [
 INPT                     24.7972            8.7898             2.8211[.017 [
 DI(-1)                  -.059907            .46884            -.12778[.901 [
 DI(-2)                   -.15531            .45188            -.34370[.738 [
 DI(-3)                   -.60283            .45899            -1.3134[.216 [
```

```
DI(-4)                  -1.0097           .51149          -1.9740[.074 [
DI(-5)                  -.46991           .41635          -1.1286[.283 [
DI(-6)                  -1.0531           .42035          -2.5053[.029 [
DI(-7)                  -.86961           .44915          -1.9361[.079 [
DC(-1)                  38.2157           17.0177           2.2456[.046 [
DC(-2)                  31.8372           12.6569           2.5154[.029 [
DC(-3)                  29.6838           11.3474           2.6159[.024 [
DC(-4)                  10.6416            7.3308           1.4516[.175 [
DC(-5)                  12.7317            6.4557           1.9722[.074 [
DC(-6)                   6.9037            4.9871           1.3843[.194 [
DC(-7)                  -5.8976            5.2918          -1.1145[.289 [
DG(-1)                   1.3851            1.1256           1.2305[.244 [
DG(-2)                   .89637            1.2895           .69512[.501 [
DG(-3)                   2.1596            1.6180           1.3347[.209 [
DG(-4)                   4.4697            1.5932           2.8055[.017 [
DG(-5)                   2.1201            1.3564           1.5630[.146 [
DG(-6)                   2.5749            1.3571           1.8974[.084 [
DG(-7)                   2.2983            1.2711           1.8081[.098 [
DA(-1)                  -.050891          .023963          -2.1238[.057 [
DA(-2)                  -.046030          .016993          -2.7087[.020 [
DA(-3)                  -.040170          .016105          -2.4942[.030 [
DA(-4)                  -.022288          .011675          -1.9091[.083 [
DA(-5)                  -.025807          .011235          -2.2970[.042 [
DA(-6)                  -.019712          .010606          -1.8585[.090 [
DA(-7)                 -.0075037         .0098304          -.76331[.461 [
G(-1)                    -.32502            1.0551          -.30804[.764 [
I(-1)                    -1.1947            .45876          -2.6041[.025 [
C(-1)                   -54.8858           19.4672          -2.8194[.017 [
A(-1)                    .080389           .028198           2.8509[.016 [
*******************************************************************************
Joint test of zero restrictions on the coefficients of additional variables  :
Lagrange Multiplier Statistic     CHSQ( 4)=  20.9792[.000                     [
Likelihood Ratio Statistic        CHSQ( 4)=  28.5028[.000                     [
F Statistic                  F(  4,  11)=   2.5061[.103                     [
*******************************************************************************

                Autoregressive Distributed Lag Estimates
         ARDL(8,6,8,8) selected based on Schwarz Bayesian Criterion
*******************************************************************************
Dependent variable is A
44 observations used for estimation from 1999Q1 to 2009Q4
*******************************************************************************
Regressor             Coefficient       Standard Error         T-Ratio[Prob [
A(-1)                     .40127            .22131            1.8132[.100 [
A(-2)                    -.60561            .22123           -2.7375[.021 [
A(-3)                     .16593            .17406            .95327[.363 [
A(-4)                    -.82807            .23465           -3.5290[.005 [
A(-5)                    -.24894            .17385           -1.4319[.183 [
A(-6)                     .13123            .19476            .67380[.516 [
A(-7)                     .29688            .20085            1.4781[.170 [
A(-8)                    -1.2430            .33641           -3.6950[.004 [
G                       -60.6566           25.6710           -2.3628[.040 [
G(-1)                   -20.7813           24.5289           -.84722[.417 [
G(-2)                   -52.8786           28.8647           -1.8319[.097 [
G(-3)                    74.2716           27.1198            2.7387[.021 [
G(-4)                   -72.8483           35.4646           -2.0541[.067 [
G(-5)                   -66.3111           22.3608           -2.9655[.014 [
G(-6)                    94.5815           31.6560            2.9878[.014 [
I                        18.9307            7.1972            2.6303[.025 [
I(-1)                    -8.0808            8.1289           -.99409[.344 [
I(-2)                    22.2844            8.3680            2.6630[.024 [
I(-3)                   -13.2164            7.5778           -1.7441[.112 [
```

```
 I(-4)                      -2.8979            8.1636            -.35498[.730 [
 I(-5)                       24.9348           7.8483             3.1771[.010 [
 I(-6)                      -28.7046           9.8567            -2.9122[.016 [
 I(-7)                       -7.7040           6.3789            -1.2077[.255 [
 I(-8)                       28.8421          11.3073             2.5508[.029 [
 C                          117.2148          139.4196              .84073[.420 [
 C(-1)                     -279.2947          149.9774            -1.8622[.092 [
 C(-2)                      476.8367          134.2698             3.5513[.005 [
 C(-3)                       -3.5909          107.9363           -.033269[.974 [
 C(-4)                      199.8851          130.1843             1.5354[.156 [
 C(-5)                       84.9123          103.1159              .82346[.429 [
 C(-6)                      156.1501          104.6098             1.4927[.166 [
 C(-7)                     -276.5419          137.1362            -2.0165[.071 [
 C(-8)                      541.3226          180.7320             2.9952[.013 [
 INPT                      -377.2201          162.0699            -2.3275[.042 [
*******************************************************************************
 R-Squared                      .97635   R-Bar-Squared                    .89831
 S.E. of Regression           15.8950    F-stat.    F( 33,  10)   12.5106[.000 [
 Mean of Dependent Variable   27.2001    S.D. of Dependent Variable     49.8447
 Residual Sum of Squares       2526.5    Equation Log-likelihood      -151.5421
 Akaike Info. Criterion     -185.5421    Schwarz Bayesian Criterion   -215.8734
 DW-statistic                  2.1093
*******************************************************************************


                              Diagnostic Tests
*******************************************************************************
    *Test Statistics  *        LM Version        *         F Version*
*******************************************************************************
*                           *                           *                       *
 *A:Serial Correlation*CHSQ(   4)=  24.8139[.000]*F(   4,   6)=   1.9400[.223*[
*                           *                           *                       *
 *B:Functional Form   *CHSQ(   1)=   .89159[.345]*F(   1,   9)=   .18614[.676*[
*                           *                           *                       *
 *C:Normality         *CHSQ(   2)=   4.1332[.127]*       Not applicable*
*                           *                           *                       *
 *D:Heteroscedasticity*CHSQ(   1)=   .96624[.326]*F(   1,  42)=   .94303[.337*[
*******************************************************************************
   A:Lagrange multiplier test of residual serial correlation
   B:Ramsey's RESET test using the square of the fitted values
   C:Based on a test of skewness and kurtosis of residuals
   D:Based on the regression of squared residuals on squared fitted values


          Estimated Long Run Coefficients using the ARDL Approach
         ARDL(8,6,8,8) selected based on Schwarz Bayesian Criterion
*******************************************************************************
 Dependent variable is A
 44 observations used for estimation from 1999Q1 to 2009Q4
*******************************************************************************
 Regressor             Coefficient       Standard Error         T-Ratio[Prob [
 G                       -35.7032           10.6290            -3.3590[.007 [
 I                        11.7352            2.6605             4.4110[.001 [
 C                       347.0219           86.9732             3.9900[.003 [
 INPT                   -128.7289           44.9429            -2.8643[.017 [
*******************************************************************************
```

Estimated Long Run Coefficients using the ARDL Approach
ARDL(7,4,7,1) selected based on R-BAR Squared Criterion

Dependent variable is C
45 observations used for estimation from 1998Q4 to 2009Q4

Regressor	Coefficient	Standard Error	T-Ratio[Prob [
A	.0010920	.2980E-3	3.6649[.001 [
G	-.0017447	.031674	-.055084[.957 [
I	-.029940	.0080788	-3.7060[.001 [
INPT	.46358	.018751	24.7232[.000 [

Estimated Long Run Coefficients using the ARDL Approach
ARDL(5,4,3,5) selected based on R-BAR Squared Criterion

Dependent variable is G
45 observations used for estimation from 1998Q4 to 2009Q4

Regressor	Coefficient	Standard Error	T-Ratio[Prob [
A	-.017206	.011681	-1.4730[.154 [
C	4.9995	7.1434	.69988[.491 [
I	.059023	.22695	.26007[.797 [
INPT	-1.4802	3.1587	-.46860[.644 [

Estimated Long Run Coefficients using the ARDL Approach
ARDL(1,7,7,6) selected based on R-BAR Squared Criterion

Dependent variable is I
45 observations used for estimation from 1998Q4 to 2009Q4

Regressor	Coefficient	Standard Error	T-Ratio[Prob [
C	-28.8922	7.8514	-3.6799[.001 [
G	.90169	.94963	.94951[.354 [
A	.044313	.013949	3.1768[.005 [
INPT	12.7639	3.5923	3.5531[.002 [

Ordinary Least Squares Estimation

Dependent variable is DA
44 observations used for estimation from 1999Q1 to 2009Q4

Regressor	Coefficient	Standard Error	T-Ratio[Prob [
INPT	1.0000	3.2367	.30897[.762 [
DA(-1)	2.5341	.43757	5.7915[.000 [
DA(-2)	1.8472	.34058	5.4237[.000 [
DA(-3)	1.9831	.31511	6.2931[.000 [
DA(-4)	1.1673	.25196	4.6330[.000 [
DA(-5)	.63086	.25203	2.5031[.025 [
DA(-6)	.91941	.24023	3.8272[.002 [
DA(-7)	1.5225	.22418	6.7917[.000 [
DC(-1)	-1434.4	212.4594	-6.7514[.000 [
DC(-2)	-893.3661	151.5283	-5.8957[.000 [
DC(-3)	-728.8917	151.0771	-4.8246[.000 [
DC(-4)	-669.7061	128.4159	-5.2151[.000 [
DC(-5)	-436.4222	110.5082	-3.9492[.001 [
DC(-6)	-319.3066	92.7878	-3.4413[.004 [
DC(-7)	-850.2571	120.9807	-7.0280[.000 [
DG(-1)	47.0379	22.0809	2.1303[.051 [
DG(-2)	-49.3861	20.6958	-2.3863[.032 [
DG(-3)	74.2153	24.6189	3.0146[.009 [
DG(-4)	-36.7318	21.7028	-1.6925[.113 [
DG(-5)	-141.2960	21.5323	-6.5621[.000 [
DG(-6)	5.4696	22.9254	.23858[.815 [
DG(-7)	18.8110	25.5338	.73671[.473 [

```
 DI(-1)                   -33.4949            8.0260           -4.1733[.001 [
 DI(-2)                    -2.8736            7.1496           -.40192[.694 [
 DI(-3)                   -22.8538            7.5088           -3.0436[.009 [
 DI(-4)                   -18.3383            7.1280           -2.5727[.022 [
 DI(-5)                    15.1246            7.1724            2.1087[.053 [
 DI(-6)                   -28.3617            7.0505           -4.0227[.001 [
 DI(-7)                   -36.3232            7.6021           -4.7780[.000 [
 ECA(-1)                   -2.9220            .45461           -6.4275[.000 [
*******************************************************************************
 R-Squared                    .96378   R-Bar-Squared                    .88875
 S.E. of Regression         20.1078   F-stat.    F( 29,  14)   12.8458[.000 [
 Mean of Dependent Variable  1.1058   S.D. of Dependent Variable     60.2866
 Residual Sum of Squares     5660.5   Equation Log-likelihood      -169.2891
 Akaike Info. Criterion   -199.2891   Schwarz Bayesian Criterion   -226.0519
 DW-statistic                2.3096
*******************************************************************************


                            Diagnostic Tests
*******************************************************************************
    *Test Statistics  *        LM Version        *         F Version*
*******************************************************************************
*                           *                           *                       *
 *A:Serial Correlation*CHSQ(   4)=  22.2908[.000]*F(   4,  10)=   2.5670[.103*[
*                           *                           *                       *
 *B:Functional Form   *CHSQ(   1)=   2.8435[.092]*F(   1,  13)=   .89816[.361*[
*                           *                           *                       *
 *C:Normality         *CHSQ(   2)=   2.3903[.303]*       Not applicable*
*                           *                           *                       *
 *D:Heteroscedasticity*CHSQ(   1)=   1.9458[.163]*F(   1,  42)=   1.9433[.171*[
*******************************************************************************
   A:Lagrange multiplier test of residual serial correlation
   B:Ramsey's RESET test using the square of the fitted values
   C:Based on a test of skewness and kurtosis of residuals
   D:Based on the regression of squared residuals on squared fitted values


          Wald test of restriction(s) imposed on parameters
*******************************************************************************
 Based on  OLS regression of DA on                                             :
 INPT            DA(-1)          DA(-2)          DA(-3)          DA(-4        (
 DC(-1)          DC(-2)          DC(-3)          DC(-4)          DG(-1        (
 DG(-2)          DG(-3)          DG(-4)          DI(-1)          DI(-2        (
 DI(-3)          DI(-4)          ECA(-1                                       (
 47 observations used for estimation from 1998Q2 to 2009Q4
*******************************************************************************
 Coefficients A1 to A18 are assigned to the above regressors respectively     .
 List of restriction(s) for the Wald test                                     :


 a6=0; a7=0; a8=0;a9=0


*******************************************************************************
 Wald Statistic                CHSQ( 4)=   9.1022[.059                       [


*******************************************************************************
```

```
              Wald test of restriction(s) imposed on parameters
*******************************************************************************
 Based on  OLS regression of DA on                                             :
 INPT            DA(-1)          DA(-2)          DA(-3)          DA(-4        (
 DC(-1)          DC(-2)          DC(-3)          DC(-4)          DG(-1        (
 DG(-2)          DG(-3)          DG(-4)          DI(-1)          DI(-2        (
 DI(-3)          DI(-4)          ECA(-1                                       (
 47 observations used for estimation from 1998Q2 to 2009Q4
*******************************************************************************
 Coefficients A1 to A18 are assigned to the above regressors respectively     .
 List of restriction(s) for the Wald test                                     :


 a10=0; a11=0; a12=0;a13=0


*******************************************************************************
 Wald Statistic                CHSQ( 4)=   1.8788[.758                        [


*******************************************************************************
              Wald test of restriction(s) imposed on parameters
*******************************************************************************
 Based on  OLS regression of DA on                                             :
 INPT            DA(-1)          DA(-2)          DA(-3)          DA(-4        (
 DC(-1)          DC(-2)          DC(-3)          DC(-4)          DG(-1        (
 DG(-2)          DG(-3)          DG(-4)          DI(-1)          DI(-2        (
 DI(-3)          DI(-4)          ECA(-1                                       (
 47 observations used for estimation from 1998Q2 to 2009Q4
*******************************************************************************
 Coefficients A1 to A18 are assigned to the above regressors respectively     .
 List of restriction(s) for the Wald test                                     :


 a14=0; a15=0; a16=0;a17=0


*******************************************************************************
 Wald Statistic                CHSQ( 4)=   1.7126[.788                        [


*******************************************************************************


              Wald test of restriction(s) imposed on parameters
*******************************************************************************
 Based on  OLS regression of DA on                                             :
 INPT            DA(-1)          DA(-2)          DA(-3)          DA(-4        (
 DC(-1)          DC(-2)          DC(-3)          DC(-4)          DG(-1        (
 DG(-2)          DG(-3)          DG(-4)          DI(-1)          DI(-2        (
 DI(-3)          DI(-4)          ECA(-1                                       (
 47 observations used for estimation from 1998Q2 to 2009Q4
*******************************************************************************
 Coefficients A1 to A18 are assigned to the above regressors respectively     .
 List of restriction(s) for the Wald test                                     :
```

a18=0

```
*****************************************************************************
 Wald Statistic                CHSQ( 1)=   7.2594[.007                       [
```

```
*****************************************************************************

              Wald test of restriction(s) imposed on parameters
*****************************************************************************
 Based on  OLS regression of DC on                                           :
 INPT           DC(-1)          DC(-2)          DC(-3)          DC(-4        (
 DG(-1)         DG(-2)          DG(-3)          DG(-4)          DA(-1        (
 DA(-2)         DA(-3)          DA(-4)          DI(-1)          DI(-2        (
 DI(-3)         DI(-4)          ECA(-1                                       (
 47 observations used for estimation from 1998Q2 to 2009Q4
*****************************************************************************
 Coefficients A1 to A18 are assigned to the above regressors respectively     .
 List of restriction(s) for the Wald test                                    :


 a6=0; a7=0; a8=0; a9=0
```

```
*****************************************************************************
 Wald Statistic                CHSQ( 4)=   4.9920[.288                       [
```

```
*****************************************************************************

              Wald test of restriction(s) imposed on parameters
*****************************************************************************
 Based on  OLS regression of DC on                                           :
 INPT           DC(-1)          DC(-2)          DC(-3)          DC(-4        (
 DG(-1)         DG(-2)          DG(-3)          DG(-4)          DA(-1        (
 DA(-2)         DA(-3)          DA(-4)          DI(-1)          DI(-2        (
 DI(-3)         DI(-4)          ECA(-1                                       (
 47 observations used for estimation from 1998Q2 to 2009Q4
*****************************************************************************
 Coefficients A1 to A18 are assigned to the above regressors respectively     .
 List of restriction(s) for the Wald test                                    :


 a10=0; a11=0; a12=0; a13=0
```

```
*****************************************************************************
 Wald Statistic                CHSQ( 4)=   8.3070[.081                       [
```

```
*****************************************************************************
```

```
            Wald test of restriction(s) imposed on parameters
*******************************************************************************
 Based on  OLS regression of DC on                                             :
 INPT            DC(-1)          DC(-2)          DC(-3)          DC(-4        (
 DG(-1)          DG(-2)          DG(-3)          DG(-4)          DA(-1        (
 DA(-2)          DA(-3)          DA(-4)          DI(-1)          DI(-2        (
 DI(-3)          DI(-4)          ECA(-1                                       (
 47 observations used for estimation from 1998Q2 to 2009Q4
*******************************************************************************
 Coefficients A1 to A18 are assigned to the above regressors respectively     .
 List of restriction(s) for the Wald test                                     :


 a14=0; a15=0; a16=0; a17=0


*******************************************************************************
 Wald Statistic                CHSQ( 4)=   3.8077[.433                       [


*******************************************************************************

              Wald test of restriction(s) imposed on parameters
*******************************************************************************
 Based on  OLS regression of DC on                                             :
 INPT            DC(-1)          DC(-2)          DC(-3)          DC(-4        (
 DG(-1)          DG(-2)          DG(-3)          DG(-4)          DA(-1        (
 DA(-2)          DA(-3)          DA(-4)          DI(-1)          DI(-2        (
 DI(-3)          DI(-4)          ECA(-1                                       (
 47 observations used for estimation from 1998Q2 to 2009Q4
*******************************************************************************
 Coefficients A1 to A18 are assigned to the above regressors respectively     .
 List of restriction(s) for the Wald test                                     :


 a18=0


*******************************************************************************
 Wald Statistic                CHSQ( 1)=  .037343[.847                       [


*******************************************************************************
```

Appendix T

Table 6.25:
Detail Results of ARDL Estimates for Tunisia

```
                    Variable Addition Test (OLS case                        (
*******************************************************************************
 Dependent variable is DA
 List of the variables added to the regression                                :
 A(-1)           C(-1)           G(-1)           I(-1                         (
 48 observations used for estimation from 1998Q1 to 2009Q4
*******************************************************************************
 Regressor              Coefficient       Standard Error         T-Ratio[Prob [
 INPT                    -112.9869          100.5636            -1.1235[.270 [
 DA(-1)                     .31974            .32899             .97189[.339 [
 DA(-2)                     .52638            .29338            1.7942[.083 [
 DA(-3)                     .46021            .20743            2.2186[.034 [
 DC(-1)                  -143.5974          122.5831            -1.1714[.250 [
 DC(-2)                   -89.4436           64.2719            -1.3916[.174 [
 DC(-3)                   -58.6364           81.4026            -.72033[.477 [
 DG(-1)                    -.46228           20.3355           -.022733[.982 [
 DG(-2)                    6.4380            19.7848             .32540[.747 [
 DG(-3)                    8.6891            19.5422             .44463[.660 [
 DI(-1)                   -20.9746           34.2452            -.61248[.545 [
 DI(-2)                   -37.8487           32.5014            -1.1645[.253 [
 DI(-3)                   -56.2792           34.3968            -1.6362[.112 [
 A(-1)                     -1.1843            .35347            -3.3505[.002 [
 C(-1)                    145.8843          119.5754             1.2200[.232 [
 G(-1)                    -19.1579           21.9435            -.87306[.389 [
 I(-1)                     72.0617           41.2641             1.7464[.091 [
*******************************************************************************
 Joint test of zero restrictions on the coefficients of additional variables  :
 Lagrange Multiplier Statistic     CHSQ( 4)=  16.1446[.003                    [
 Likelihood Ratio Statistic        CHSQ( 4)=  19.6797[.001                    [
 F Statistic                  F(  4,  31)=   3.9278[.011                    [
*******************************************************************************

                    Variable Addition Test (OLS case                        (
*******************************************************************************
 Dependent variable is DC
 List of the variables added to the regression                                :
 A(-1)           C(-1)           G(-1)           I(-1                         (
 46 observations used for estimation from 1998Q3 to 2009Q4
*******************************************************************************
 Regressor              Coefficient       Standard Error         T-Ratio[Prob [
 INPT                       1.1136            .35567             3.1309[.005 [
 DC(-1)                     .54929            .31613             1.7375[.097 [
 DC(-2)                     .36528            .34390             1.0622[.300 [
 DC(-3)                     .40748            .27427             1.4857[.152 [
 DC(-4)                     .72462            .19708             3.6768[.001 [
 DC(-5)                     .52046            .24693             2.1077[.047 [
 DA(-1)                  -.5039E-3          .0010175            -.49528[.626 [
 DA(-2)                   .2878E-4          .7773E-3            .037019[.971 [
 DA(-3)                   .1312E-4          .6927E-3            .018938[.985 [
 DA(-4)                  -.1548E-3          .6197E-3            -.24973[.805 [
 DA(-5)                   .1234E-3          .5017E-3             .24600[.808 [
 DG(-1)                   -.046108           .067953            -.67852[.505 [
 DG(-2)                    .050455           .048904             1.0317[.314 [
 DG(-3)                   .0053049           .047960             .11061[.913 [
 DG(-4)                   -.035465           .045082            -.78668[.440 [
 DG(-5)                   -.047555           .037945            -1.2533[.224 [
```

```
DI(-1)                    .37795            .10116            3.7363[.001 [
DI(-2)                    .29813            .12950            2.3022[.032 [
DI(-3)                    .29288            .090920           3.2213[.004 [
DI(-4)                    .15950            .073530           2.1692[.042 [
DI(-5)                    .25279            .085755           2.9478[.008 [
A(-1)                   .6340E-3           .0011327           .55968[.582 [
C(-1)                    -1.3013             .38618          -3.3696[.003 [
G(-1)                    .040481            .079575           .50872[.616 [
I(-1)                    -.50610             .15518          -3.2615[.004 [
*******************************************************************************
Joint test of zero restrictions on the coefficients of additional variables  :
Lagrange Multiplier Statistic     CHSQ( 4)=  18.7107[.001                    [
Likelihood Ratio Statistic        CHSQ( 4)=  24.0188[.000                    [
F Statistic                   F(  4,  21)=   3.5996[.022                    [
*******************************************************************************

                     Variable Addition Test (OLS case                        (
*******************************************************************************
Dependent variable is DG
List of the variables added to the regression                                :
A(-1)          C(-1)           G(-1)           I(-1                          (
48 observations used for estimation from 1998Q1 to 2009Q4
*******************************************************************************
Regressor              Coefficient       Standard Error         T-Ratio[Prob [
INPT                       1.2051            .93897            1.2834[.209 [
DG(-1)                     .29352            .18987            1.5458[.132 [
DG(-2)                     .61790            .18473            3.3449[.002 [
DG(-3)                     .28791            .18247            1.5778[.125 [
DA(-1)                    .0019700          .0030718            .64133[.526 [
DA(-2)                    .0022525          .0027393            .82228[.417 [
DA(-3)                   -.2735E-3          .0019368           -.14120[.889 [
DC(-1)                     1.2297            1.1446            1.0744[.291 [
DC(-2)                     -.25345            .60011           -.42234[.676 [
DC(-3)                     .69719            .76006            .91728[.366 [
DI(-1)                     .19701            .31975            .61613[.542 [
DI(-2)                     -.19779            .30347           -.65175[.519 [
DI(-3)                     -.25654            .32117           -.79877[.431 [
A(-1)                    -.0014579          .0033004           -.44175[.662 [
C(-1)                      -1.1368            1.1165           -1.0182[.316 [
G(-1)                      -.73607            .20489           -3.5926[.001 [
I(-1)                     .0086369            .38529           .022417[.982 [
*******************************************************************************
Joint test of zero restrictions on the coefficients of additional variables  :
Lagrange Multiplier Statistic     CHSQ( 4)=  17.9090[.001                    [
Likelihood Ratio Statistic        CHSQ( 4)=  22.4147[.000                    [
F Statistic                   F(  4,  31)=   4.6125[.005                    [
*******************************************************************************

                     Variable Addition Test (OLS case                        (
*******************************************************************************
Dependent variable is DI
List of the variables added to the regression                                :
A(-1)          C(-1)           G(-1)           I(-1                          (
48 observations used for estimation from 1998Q1 to 2009Q4
*******************************************************************************
Regressor              Coefficient       Standard Error         T-Ratio[Prob [
INPT                       1.5787            .53310            2.9613[.006 [
DI(-1)                     .68112            .18154            3.7519[.001 [
DI(-2)                     .20590            .17229            1.1951[.241 [
DI(-3)                     .12484            .18234            .68466[.499 [
DA(-1)                   -.7822E-3          .0017440           -.44850[.657 [
DA(-2)                    .6499E-4          .0015553           .041785[.967 [
```

```
DA(-3)                    .7746E-3          .0010996             .70445[.486 [
DC(-1)                      1.3448            .64983             2.0694[.047 [
DC(-2)                      .34437            .34071             1.0107[.320 [
DC(-3)                      .60820            .43153             1.4094[.169 [
DG(-1)                     .074599            .10780             .69201[.494 [
DG(-2)                    -.023656            .10488            -.22555[.823 [
DG(-3)                     .060144            .10360             .58056[.566 [
A(-1)                    -.0010104          .0018738            -.53921[.594 [
C(-1)                      -1.5935            .63389            -2.5139[.017 [
G(-1)                     -.093248            .11633            -.80161[.429 [
I(-1)                      -.83779            .21875            -3.8299[.001 [
*******************************************************************************
Joint test of zero restrictions on the coefficients of additional variables  :
Lagrange Multiplier Statistic     CHSQ( 4)=  15.9171[.003                     [
Likelihood Ratio Statistic        CHSQ( 4)=  19.3381[.001                     [
F Statistic                    F(  4,  31)=   3.8450[.012                     [
*******************************************************************************

                Autoregressive Distributed Lag Estimates
          ARDL(1,0,0,0) selected based on R-BAR Squared Criterion
*******************************************************************************
Dependent variable is A
49 observations used for estimation from 1997Q4 to 2009Q4
*******************************************************************************
Regressor              Coefficient       Standard Error         T-Ratio[Prob [
A(-1)                      .17813             .13113             1.3584[.181 [
C                         44.8209            14.9706             2.9939[.005 [
G                        -23.1802            11.0703            -2.0939[.042 [
I                          2.4504            15.3714             .15942[.874 [
INPT                     -12.0483             7.5667            -1.5923[.118 [
*******************************************************************************
R-Squared                     .30035   R-Bar-Squared                    .23674
S.E. of Regression          30.3576   F-stat.    F(  4,  44)    4.7221[.003 [
Mean of Dependent Variable   9.9934   S.D. of Dependent Variable     34.7482
Residual Sum of Squares     40549.6   Equation Log-likelihood      -234.1303
Akaike Info. Criterion    -239.1303   Schwarz Bayesian Criterion   -243.8598
DW-statistic                 1.9786   Durbin's h-statistic      .18886[.850 [
*******************************************************************************


                            Diagnostic Tests
*******************************************************************************
    *Test Statistics  *        LM Version        *         F Version*
*******************************************************************************
*                           *                           *                       *
 *A:Serial Correlation*CHSQ(   4)=   3.1582[.532]*F(   4,  40)=   .68894[.604*[
*                           *                           *                       *
 *B:Functional Form   *CHSQ(   1)=   .15671[.692]*F(   1,  43)=   .13796[.712*[
*                           *                           *                       *
 *C:Normality         *CHSQ(   2)=   7.1828[.028]*       Not applicable*
*                           *                           *                       *
 *D:Heteroscedasticity*CHSQ(   1)=   2.1945[.139]*F(   1,  47)=   2.2036[.144*[
*******************************************************************************
   A:Lagrange multiplier test of residual serial correlation
   B:Ramsey's RESET test using the square of the fitted values
   C:Based on a test of skewness and kurtosis of residuals
   D:Based on the regression of squared residuals on squared fitted values
```

Estimated Long Run Coefficients using the ARDL Approach
ARDL(1,0,0,0) selected based on R-BAR Squared Criterion

Dependent variable is A
49 observations used for estimation from 1997Q4 to 2009Q4

Regressor	Coefficient	Standard Error	T-Ratio[Prob [
C	54.5350	18.4445	2.9567[.005 [
G	-28.2041	13.5277	-2.0849[.043 [
I	2.9815	18.8162	.15846[.875 [
INPT	-14.6595	9.9847	-1.4682[.149 [

Estimated Long Run Coefficients using the ARDL Approach
ARDL(1,1,1,2) selected

Dependent variable is C
49 observations used for estimation from 1997Q4 to 2009Q4

Regressor	Coefficient	Standard Error	T-Ratio[Prob [
I	.25988	.24667	1.0535[.298 [
G	.45364	.18218	2.4900[.017 [
A	.0035059	.0034059	1.0294[.309 [
INPT	.28865	.14568	1.9814[.054 [

Ordinary Least Squares Estimation

Dependent variable is DA
48 observations used for estimation from 1998Q1 to 2009Q4

Regressor	Coefficient	Standard Error	T-Ratio[Prob [
INPT	1.4092	4.8974	.28775[.775 [
DA(-1)	.31852	.31385	1.0149[.317 [
DA(-2)	.47124	.28081	1.6781[.102 [
DA(-3)	.39601	.20406	1.9407[.061 [
DC(-1)	-63.9279	75.1207	-.85100[.401 [
DC(-2)	-47.8858	24.8372	-1.9280[.062 [
DC(-3)	-50.2761	76.4408	-.65771[.515 [
DG(-1)	5.1109	17.7468	.28799[.775 [
DG(-2)	15.4508	16.9746	.91023[.369 [
DG(-3)	16.7320	16.6597	1.0043[.322 [
DI(-1)	11.7589	27.7956	.42305[.675 [
DI(-2)	-7.7346	26.1781	-.29546[.769 [
DI(-3)	-21.1862	27.6181	-.76711[.448 [
ECA(-1)	-1.1535	.33762	-3.4167[.002 [

R-Squared	.59206	R-Bar-Squared	.43608
S.E. of Regression	33.2707	F-stat. F(13, 34)	3.7957[.001 [
Mean of Dependent Variable	.098197	S.D. of Dependent Variable	44.3048
Residual Sum of Squares	37635.8	Equation Log-likelihood	-228.0573
Akaike Info. Criterion	-242.0573	Schwarz Bayesian Criterion	-255.1557
DW-statistic	2.0282		

```
                              Diagnostic Tests
*******************************************************************************
    *Test Statistics  *        LM Version        *         F Version*
*******************************************************************************
*                     *                          *                          *
 *A:Serial Correlation*CHSQ(   4)=   7.5412[.110]*F(   4,  30)=   1.3979[.259*[
*                     *                          *                          *
 *B:Functional Form   *CHSQ(   1)=  .024665[.875]*F(   1,  33)=  .016966[.897*[
*                     *                          *                          *
 *C:Normality         *CHSQ(   2)=   .65855[.719]*       Not applicable*
*                     *                          *                          *
 *D:Heteroscedasticity*CHSQ(   1)=   9.5406[.002]*F(   1,  46)=  11.4112[.001*[
*******************************************************************************
   A:Lagrange multiplier test of residual serial correlation
   B:Ramsey's RESET test using the square of the fitted values
   C:Based on a test of skewness and kurtosis of residuals
   D:Based on the regression of squared residuals on squared fitted values

               Wald test of restriction(s) imposed on parameters
*******************************************************************************
 Based on  OLS regression of DA on                                            :
 INPT            DA(-1)          DA(-2)          DA(-3)          DC(-1        (
 DC(-2)          DC(-3)          DG(-1)          DG(-2)          DG(-3        (
 DI(-1)          DI(-2)          DI(-3)          ECA(-1                       (
 48 observations used for estimation from 1998Q1 to 2009Q4
*******************************************************************************
 Coefficients A1 to A14 are assigned to the above regressors respectively     .
 List of restriction(s) for the Wald test                                     :



 a5=0; a6=0; a7=0



*******************************************************************************
 Wald Statistic                CHSQ( 3)=   3.7532[.289                       [



*******************************************************************************

               Wald test of restriction(s) imposed on parameters
*******************************************************************************
 Based on  OLS regression of DA on                                            :
 INPT            DA(-1)          DA(-2)          DA(-3)          DC(-1        (
 DC(-2)          DC(-3)          DG(-1)          DG(-2)          DG(-3        (
 DI(-1)          DI(-2)          DI(-3)          ECA(-1                       (
 48 observations used for estimation from 1998Q1 to 2009Q4
*******************************************************************************
 Coefficients A1 to A14 are assigned to the above regressors respectively     .
 List of restriction(s) for the Wald test                                     :



 a8=0; a9=0; a10=0
```

```
*******************************************************************************
 Wald Statistic                CHSQ( 3)=   1.4398[.696                       [


*******************************************************************************

              Wald test of restriction(s) imposed on parameters
*******************************************************************************
 Based on  OLS regression of DA on                                            :
 INPT           DA(-1)          DA(-2)          DA(-3)          DC(-1        (
 DC(-2)         DC(-3)          DG(-1)          DG(-2)          DG(-3        (
 DI(-1)         DI(-2)          DI(-3)          ECA(-1                       (
 48 observations used for estimation from 1998Q1 to 2009Q4
*******************************************************************************
 Coefficients A1 to A14 are assigned to the above regressors respectively     .
 List of restriction(s) for the Wald test                                     :


 a11=0; a12=0; a13=0


*******************************************************************************
 Wald Statistic                CHSQ( 3)=   1.4486[.694                       [


*******************************************************************************
              Wald test of restriction(s) imposed on parameters
*******************************************************************************
 Based on  OLS regression of DA on                                            :
 INPT           DA(-1)          DA(-2)          DA(-3)          DC(-1        (
 DC(-2)         DC(-3)          DG(-1)          DG(-2)          DG(-3        (
 DI(-1)         DI(-2)          DI(-3)          ECA(-1                       (
 48 observations used for estimation from 1998Q1 to 2009Q4
*******************************************************************************
 Coefficients A1 to A14 are assigned to the above regressors respectively     .
 List of restriction(s) for the Wald test                                     :


 a14=0


*******************************************************************************
 Wald Statistic                CHSQ( 1)=  11.6738[.001                       [


*******************************************************************************
```

```
                Ordinary Least Squares Estimation
     Based on Newey-West adjusted S.E.'s Equal weights, truncation lag= 3
********************************************************************************
 Dependent variable is DC
 48 observations used for estimation from 1998Q1 to 2009Q4
********************************************************************************
 Regressor              Coefficient       Standard Error         T-Ratio[Prob [
 INPT                    -.0080615            .015184            -.53092[.599 [
 DC(-1)                    -.44432            .078136            -5.6865[.000 [
 DC(-2)                    -.91953            .023711           -38.7809[.000 [
 DC(-3)                    -.45161             .11894            -3.7969[.001 [
 DA(-1)                  -.1936E-3           .3432E-3            -.56410[.576 [
 DA(-2)                   .5008E-3           .2416E-3             2.0724[.046 [
 DA(-3)                   .4952E-4           .3513E-3             .14097[.889 [
 DG(-1)                   .0018167            .029775            .061015[.952 [
 DG(-2)                    .041349            .034277             1.2063[.236 [
 DG(-3)                  -.0072753            .020217            -.35986[.721 [
 DI(-1)                    .082906            .023103             3.5885[.001 [
 DI(-2)                    -.14607            .036306            -4.0232[.000 [
 DI(-3)                    .064164            .077534             .82756[.414 [
 ECC(-1)                  -.082618            .085341            -.96809[.340 [
********************************************************************************
              Wald test of restriction(s) imposed on parameters
********************************************************************************
 Based on  OLS regression of DC on                                             :
 INPT            DC(-1)          DC(-2)          DC(-3)          DA(-1        (
 DA(-2)          DA(-3)          DG(-1)          DG(-2)          DG(-3        (
 DI(-1)          DI(-2)          DI(-3)          ECC(-1                       (
 48 observations used for estimation from 1998Q1 to 2009Q4
********************************************************************************
 Coefficients A1 to A14 are assigned to the above regressors respectively     .
 List of restriction(s) for the Wald test                                     :


 a5=0; a6=0; a7=0


********************************************************************************
 Wald Statistic                CHSQ( 3)=  36.6523[.000                        [


********************************************************************************

              Wald test of restriction(s) imposed on parameters
********************************************************************************
 Based on  OLS regression of DC on                                             :
 INPT            DC(-1)          DC(-2)          DC(-3)          DA(-1        (
 DA(-2)          DA(-3)          DG(-1)          DG(-2)          DG(-3        (
 DI(-1)          DI(-2)          DI(-3)          ECC(-1                       (
 48 observations used for estimation from 1998Q1 to 2009Q4
********************************************************************************
 Coefficients A1 to A14 are assigned to the above regressors respectively     .
 List of restriction(s) for the Wald test                                     :
```

```
 a8=0; a9=0; a10=0


*****************************************************************************
 Wald Statistic                CHSQ( 3)=   1.7316[.630                       [


*****************************************************************************

              Wald test of restriction(s) imposed on parameters
*****************************************************************************
 Based on  OLS regression of DC on                                           :
 INPT            DC(-1)          DC(-2)          DC(-3)          DA(-1       (
 DA(-2)          DA(-3)          DG(-1)          DG(-2)          DG(-3       (
 DI(-1)          DI(-2)          DI(-3)          ECC(-1                      (
 48 observations used for estimation from 1998Q1 to 2009Q4
*****************************************************************************
 Coefficients A1 to A14 are assigned to the above regressors respectively    .
 List of restriction(s) for the Wald test                                    :


 a11=0; a12=0; a13=0


*****************************************************************************
 Wald Statistic                CHSQ( 3)=   *NONE                            *


*****************************************************************************
 There is a possibility that restrictions are linearly dependent

               Wald test of restriction(s) imposed on parameters

*****************************************************************************
 Based on  OLS regression of DC on                                           :
 INPT            DC(-1)          DC(-2)          DC(-3)          DA(-1       (
 DA(-2)          DA(-3)          DG(-1)          DG(-2)          DG(-3       (
 DI(-1)          DI(-2)          DI(-3)          ECC(-1                      (
 48 observations used for estimation from 1998Q1 to 2009Q4
*****************************************************************************
 Coefficients A1 to A14 are assigned to the above regressors respectively    .
 List of restriction(s) for the Wald test                                    :


 a14=0


*****************************************************************************
 Wald Statistic                CHSQ( 1)=   .93720[.333                       [


*****************************************************************************
```

```
                Ordinary Least Squares Estimation
*******************************************************************************
 Dependent variable is DG
 48 observations used for estimation from 1998Q1 to 2009Q4
*******************************************************************************
 Regressor              Coefficient       Standard Error         T-Ratio[Prob [
 INPT                     .0034449            .044778            .076934[.939 [
 DG(-1)                     .30941             .17350             1.7833[.083 [
 DG(-2)                     .62465             .17533             3.5628[.001 [
 DG(-3)                     .26474             .17748             1.4917[.145 [
 DA(-1)                    .0027247           .0015732             1.7320[.092 [
 DA(-2)                    .0027794           .0018462             1.5055[.141 [
 DA(-3)                    .1204E-3           .0016187            .074398[.941 [
 DI(-1)                     .15026             .25721             .58420[.563 [
 DI(-2)                    -.20872             .24473            -.85286[.400 [
 DI(-3)                    -.27995             .25175            -1.1120[.274 [
 DC(-1)                    .055860             .68270            .081822[.935 [
 DC(-2)                    -1.0022             .21105            -4.7484[.000 [
 DC(-3)                     .28661             .70692             .40544[.688 [
 ECG(-1)                   -.71420             .18278            -3.9074[.000 [
*******************************************************************************
 R-Squared                      .83614   R-Bar-Squared                   .77349
 S.E. of Regression             .30775   F-stat.    F( 13,  34)   13.3457[.000 [
 Mean of Dependent Variable -.0091843   S.D. of Dependent Variable      .64663
 Residual Sum of Squares        3.2201   Equation Log-likelihood        -3.2665
 Akaike Info. Criterion       -17.2665   Schwarz Bayesian Criterion    -30.3649
 DW-statistic                   1.9191
*******************************************************************************


                              Diagnostic Tests
*******************************************************************************
    *Test Statistics  *        LM Version        *         F Version*
*******************************************************************************
*                            *                           *                     *
 *A:Serial Correlation*CHSQ(   4)=   2.4956[.645]*F(   4,  30)=   .41133[.799*[
*                            *                           *                     *
 *B:Functional Form   *CHSQ(   1)=   .60885[.435]*F(   1,  33)=   .42396[.519*[
*                            *                           *                     *
 *C:Normality         *CHSQ(   2)=   .12592[.939]*       Not applicable*
*                            *                           *                     *
 *D:Heteroscedasticity*CHSQ(   1)= .5819E-3[.981]*F(   1,  46)= .5577E-3[.981*[
*******************************************************************************
   A:Lagrange multiplier test of residual serial correlation
   B:Ramsey's RESET test using the square of the fitted values
   C:Based on a test of skewness and kurtosis of residuals
   D:Based on the regression of squared residuals on squared fitted values


            Wald test of restriction(s) imposed on parameters
*******************************************************************************
 Based on  OLS regression of DG on                                            :
 INPT           DG(-1)          DG(-2)          DG(-3)          DA(-1        (
 DA(-2)         DA(-3)          DI(-1)          DI(-2)          DI(-3        (
 DC(-1)         DC(-2)          DC(-3)          ECG(-1                       (
 48 observations used for estimation from 1998Q1 to 2009Q4
*******************************************************************************
```

```
 Coefficients A1 to A14 are assigned to the above regressors respectively     .
 List of restriction(s) for the Wald test                                    :


 a5=0; a6=0; a7=0


*****************************************************************************
 Wald Statistic                CHSQ( 3)=   3.8218[.281                       [


*****************************************************************************

              Wald test of restriction(s) imposed on parameters
*****************************************************************************
 Based on  OLS regression of DG on                                           :
 INPT            DG(-1)          DG(-2)          DG(-3)          DA(-1       (
 DA(-2)          DA(-3)          DI(-1)          DI(-2)          DI(-3       (
 DC(-1)          DC(-2)          DC(-3)          ECG(-1                      (
 48 observations used for estimation from 1998Q1 to 2009Q4
*****************************************************************************
 Coefficients A1 to A14 are assigned to the above regressors respectively     .
 List of restriction(s) for the Wald test                                    :


 a8=0; a9=0; a10=0


*****************************************************************************
 Wald Statistic                CHSQ( 3)=   3.9458[.267                       [


*****************************************************************************

              Wald test of restriction(s) imposed on parameters
*****************************************************************************
 Based on  OLS regression of DG on                                           :
 INPT            DG(-1)          DG(-2)          DG(-3)          DA(-1       (
 DA(-2)          DA(-3)          DI(-1)          DI(-2)          DI(-3       (
 DC(-1)          DC(-2)          DC(-3)          ECG(-1                      (
 48 observations used for estimation from 1998Q1 to 2009Q4
*****************************************************************************
 Coefficients A1 to A14 are assigned to the above regressors respectively     .
 List of restriction(s) for the Wald test                                    :


 a11=0; a12=0; a13=0


*****************************************************************************
 Wald Statistic                CHSQ( 3)=  30.0235[.000                       [
```

```
********************************************************************************

              Wald test of restriction(s) imposed on parameters
********************************************************************************
 Based on  OLS regression of DG on                                             :
 INPT            DG(-1)          DG(-2)          DG(-3)          DA(-1        (
 DA(-2)          DA(-3)          DI(-1)          DI(-2)          DI(-3        (
 DC(-1)          DC(-2)          DC(-3)          ECG(-1                       (
 48 observations used for estimation from 1998Q1 to 2009Q4
********************************************************************************
 Coefficients A1 to A14 are assigned to the above regressors respectively     .
 List of restriction(s) for the Wald test                                     :


 a14=0


********************************************************************************
 Wald Statistic                CHSQ( 1)=  15.2675[.000                        [


********************************************************************************

                     Ordinary Least Squares Estimation
     Based on Newey-West adjusted S.E.'s Equal weights, truncation lag= 3
********************************************************************************
 Dependent variable is DI
 48 observations used for estimation from 1998Q1 to 2009Q4
********************************************************************************
 Regressor              Coefficient       Standard Error         T-Ratio[Prob [
 INPT                     .0052957            .015293             .34629[.731 [
 DI(-1)                     .26458            .010820            24.4528[.000 [
 DI(-2)                    -.18524             .21987            -.84251[.405 [
 DI(-3)                    -.28402             .18972            -1.4971[.144 [
 DA(-1)                  -.0017563           .4084E-3            -4.3000[.000 [
 DA(-2)                   .3186E-4           .0010917            .029181[.977 [
 DA(-3)                   .0011237           .7904E-3             1.4217[.164 [
 DG(-1)                    .054660            .096902             .56408[.576 [
 DG(-2)                   -.071922            .067073            -1.0723[.291 [
 DG(-3)                    .024726             .15116             .16358[.871 [
 DC(-1)                   -.030032             .22597            -.13290[.895 [
 DC(-2)                    -.45219            .050468            -8.9599[.000 [
 DC(-3)                     .32676             *NONE*              *NONE       *
 ECI(-1)                  -.045537            .096676            -.47102[.641 [
********************************************************************************

              Wald test of restriction(s) imposed on parameters
********************************************************************************
 Based on  OLS regression of DI on                                             :
 INPT            DI(-1)          DI(-2)          DI(-3)          DA(-1        (
 DA(-2)          DA(-3)          DG(-1)          DG(-2)          DG(-3        (
 DC(-1)          DC(-2)          DC(-3)          ECG(-1                       (
 48 observations used for estimation from 1998Q1 to 2009Q4
********************************************************************************
```

```
 Coefficients A1 to A14 are assigned to the above regressors respectively     .
 List of restriction(s) for the Wald test                                     :


 a5=0; a6=0; a7=0


*******************************************************************************
 Wald Statistic                CHSQ( 3)=  27.2459[.000                        [


*******************************************************************************

              Wald test of restriction(s) imposed on parameters
*******************************************************************************
 Based on  OLS regression of DI on                                            :
 INPT            DI(-1)          DI(-2)          DI(-3)          DA(-1        (
 DA(-2)          DA(-3)          DG(-1)          DG(-2)          DG(-3        (
 DC(-1)          DC(-2)          DC(-3)          ECG(-1                       (
 48 observations used for estimation from 1998Q1 to 2009Q4
*******************************************************************************
 Coefficients A1 to A14 are assigned to the above regressors respectively     .
 List of restriction(s) for the Wald test                                     :


 a8=0; a9=0; a10=0


*******************************************************************************
 Wald Statistic                CHSQ( 3)=   *NONE                             *


*******************************************************************************
 There is a possibility that restrictions are linearly dependent



              Wald test of restriction(s) imposed on parameters
*******************************************************************************
 Based on  OLS regression of DI on                                            :
 INPT            DI(-1)          DI(-2)          DI(-3)          DA(-1        (
 DA(-2)          DA(-3)          DG(-1)          DG(-2)          DG(-3        (
 DC(-1)          DC(-2)          DC(-3)          ECG(-1                       (
 48 observations used for estimation from 1998Q1 to 2009Q4
*******************************************************************************
 Coefficients A1 to A14 are assigned to the above regressors respectively     .
 List of restriction(s) for the Wald test                                     :


 a11=0; a12=0; a13=0
```

```
*******************************************************************************
 Wald Statistic                CHSQ( 3)=   *NONE                               *


*******************************************************************************
 There is a possibility that restrictions are linearly dependent


                   Wald test of restriction(s) imposed on parameters

*******************************************************************************
 Based on  OLS regression of DI on                                             :
 INPT            DI(-1)          DI(-2)          DI(-3)          DA(-1        (
 DA(-2)          DA(-3)          DG(-1)          DG(-2)          DG(-3        (
 DC(-1)          DC(-2)          DC(-3)          ECG(-1                       (
 48 observations used for estimation from 1998Q1 to 2009Q4
*******************************************************************************
 Coefficients A1 to A14 are assigned to the above regressors respectively     .
 List of restriction(s) for the Wald test                                     :


 a14=0


*******************************************************************************
 Wald Statistic                CHSQ( 1)=   .22186[.638                       [


*******************************************************************************
```

Appendix U

Table 6.26:
Detail Results of ARDL Estimates for Senegal

```
                      Variable Addition Test (OLS case                        (
*******************************************************************************
 Dependent variable is DA
 List of the variables added to the regression                                :
 A(-1)           C(-1)           G(-1)           I(-1                         (
 48 observations used for estimation from 1998Q1 to 2009Q4
*******************************************************************************
 Regressor              Coefficient       Standard Error         T-Ratio[Prob [
 INPT                      -4.7936           17.5750            -.27275[.787 [
 DA(-1)                    -.12439            .25365            -.49041[.627 [
 DA(-2)                   -.016595            .21451           -.077362[.939 [
 DA(-3)                   -.018827            .15565            -.12096[.905 [
 DC(-1)                   -10.6728           34.3756            -.31048[.758 [
 DC(-2)                   -26.5241           18.5985            -1.4261[.164 [
 DC(-3)                   -20.6997           22.7557            -.90965[.370 [
 DG(-1)                    -3.1348            3.8511            -.81401[.422 [
 DG(-2)                     1.7926            3.9430             .45462[.653 [
 DG(-3)                     9.1502            4.1768            2.1907[.036 [
 DI(-1)                    -1.2560            4.6725            -.26880[.790 [
 DI(-2)                     7.2579            4.6566             1.5586[.129 [
 DI(-3)                    12.0386            4.2089             2.8603[.008 [
 A(-1)                     -.56135            .25924            -2.1653[.038 [
 C(-1)                     27.2192           36.6539             .74260[.463 [
 G(-1)                     -8.6184            4.5370            -1.8996[.067 [
 I(-1)                     -9.4707            4.1559            -2.2788[.030 [
*******************************************************************************
 Joint test of zero restrictions on the coefficients of additional variables  :
 Lagrange Multiplier Statistic     CHSQ( 4)=  12.6003[.013                    [
 Likelihood Ratio Statistic        CHSQ( 4)=  14.6159[.006                    [
 F Statistic                   F(  4,  31)=   2.7586[.045                    [
*******************************************************************************

                      Variable Addition Test (OLS case                        (
*******************************************************************************
 Dependent variable is DC
 List of the variables added to the regression                                :
 A(-1)           C(-1)           G(-1)           I(-1                         (
 46 observations used for estimation from 1998Q3 to 2009Q4
*******************************************************************************
 Regressor              Coefficient       Standard Error         T-Ratio[Prob [
 INPT                       .45665            .12395             3.6841[.001 [
 DC(-1)                     .50038            .27237             1.8372[.080 [
 DC(-2)                     .56429            .29560             1.9090[.070 [
 DC(-3)                     .55352            .25661             2.1571[.043 [
 DC(-4)                     .99682            .20439             4.8770[.000 [
 DC(-5)                     .62228            .22957             2.7107[.013 [
 DA(-1)                  -.4794E-3          .0021315            -.22492[.824 [
 DA(-2)                   .7841E-3          .0021393             .36653[.718 [
 DA(-3)                   .0013889          .0021138             .65704[.518 [
 DA(-4)                   .0038713          .0022135             1.7489[.095 [
 DA(-5)                   .0026580          .0023162             1.1476[.264 [
 DG(-1)                   -.089376           .047611            -1.8772[.074 [
 DG(-2)                   -.060928           .029992            -2.0315[.055 [
 DG(-3)                   -.023151           .028577            -.81013[.427 [
 DG(-4)                   -.021491           .030823            -.69725[.493 [
 DG(-5)                   -.032651           .030434            -1.0729[.296 [
 DI(-1)                   -.063685           .044970            -1.4162[.171 [
```

```
DI(-2)                  -.048201           .033200           -1.4518[.161 [
DI(-3)                  -.049891           .034631           -1.4407[.164 [
DI(-4)                  -.033052           .036440           -.90701[.375 [
DI(-5)                  -.038288           .034647           -1.1051[.282 [
A(-1)                  -.4339E-3          .0021945           -.19771[.845 [
C(-1)                    -1.0756            .28002           -3.8413[.001 [
G(-1)                     .083471           .049948            1.6712[.110 [
I(-1)                      .10449           .051665            2.0225[.056 [
*******************************************************************************
Joint test of zero restrictions on the coefficients of additional variables  :
Lagrange Multiplier Statistic     CHSQ( 4)=  19.4796[.001                    [
Likelihood Ratio Statistic        CHSQ( 4)=  25.3334[.000                    [
F Statistic                   F(  4,  21)=   3.8562[.017                    [
*******************************************************************************

                     Variable Addition Test (OLS case                        (
*******************************************************************************
Dependent variable is DG
List of the variables added to the regression                                :
A(-1)          C(-1)          G(-1)          I(-1                            (
48 observations used for estimation from 1998Q1 to 2009Q4
*******************************************************************************
Regressor              Coefficient       Standard Error         T-Ratio[Prob [
INPT                      -.87933            .67616           -1.3005[.203 [
DG(-1)                     .28602            .14816            1.9304[.063 [
DG(-2)                     .52504            .15170            3.4611[.002 [
DG(-3)                     .18120            .16069            1.1276[.268 [
DA(-1)                  -.0078115          .0097587           -.80047[.430 [
DA(-2)                  -.0030661          .0082529           -.37152[.713 [
DA(-3)                  -.0068052          .0059884           -1.1364[.264 [
DC(-1)                    -2.3822            1.3225           -1.8013[.081 [
DC(-2)                    -1.8502            .71553           -2.5858[.015 [
DC(-3)                    -1.4712            .87547           -1.6804[.103 [
DI(-1)                     .39196            .17976            2.1804[.037 [
DI(-2)                     .34937            .17915            1.9501[.060 [
DI(-3)                     .41601            .16193            2.5691[.015 [
A(-1)                   .0040404          .0099738            .40510[.688 [
C(-1)                      2.4801            1.4102            1.7587[.088 [
G(-1)                     -.83880            .17455           -4.8055[.000 [
I(-1)                     -.39304            .15989           -2.4582[.020 [
*******************************************************************************
Joint test of zero restrictions on the coefficients of additional variables  :
Lagrange Multiplier Statistic     CHSQ( 4)=  22.7437[.000                    [
Likelihood Ratio Statistic        CHSQ( 4)=  30.8220[.000                    [
F Statistic                   F(  4,  31)=   6.9790[.000                    [
*******************************************************************************

                     Variable Addition Test (OLS case                        (
*******************************************************************************
Dependent variable is DI
List of the variables added to the regression                                :
A(-1)          C(-1)          G(-1)          I(-1                            (
48 observations used for estimation from 1998Q1 to 2009Q4
*******************************************************************************
Regressor              Coefficient       Standard Error         T-Ratio[Prob [
INPT                      -.98798            .70449           -1.4024[.171 [
DI(-1)                   -.025619            .18730           -.13678[.892 [
DI(-2)                     .22318            .18666            1.1957[.241 [
DI(-3)                     .19198            .16871            1.1379[.264 [
DA(-1)                  -.028745           .010168           -2.8271[.008 [
DA(-2)                  -.020466          .0085987           -2.3801[.024 [
DA(-3)                  -.027850          .0062393           -4.4637[.000 [
```

```
 DC(-1)                    -2.2628            1.3779           -1.6421[.111 [
 DC(-2)                    -1.4187            .74551           -1.9030[.066 [
 DC(-3)                    -1.6369            .91215           -1.7946[.082 [
 DG(-1)                   -.056900            .15437           -.36859[.715 [
 DG(-2)                   -.026083            .15805           -.16502[.870 [
 DG(-3)                     .33903            .16743            2.0250[.052 [
 A(-1)                      .033240           .010392            3.1987[.003 [
 C(-1)                      2.0112            1.4693            1.3689[.181 [
 G(-1)                     -.16435            .18186           -.90371[.373 [
 I(-1)                     -.53112            .16659           -3.1882[.003 [
*******************************************************************************
 Joint test of zero restrictions on the coefficients of additional variables  :
 Lagrange Multiplier Statistic     CHSQ( 4)=  20.1646[.000                     [
 Likelihood Ratio Statistic        CHSQ( 4)=  26.1548[.000                     [
 F Statistic                   F(  4,  31)=   5.6143[.002                     [
*******************************************************************************

               Autoregressive Distributed Lag Estimates
        ARDL(0,0,0,1) selected based on Akaike Information Criterion
*******************************************************************************
 Dependent variable is A
 49 observations used for estimation from 1997Q4 to 2009Q4
*******************************************************************************
 Regressor             Coefficient       Standard Error         T-Ratio[Prob [
 C                        13.7145            5.3496             2.5637[.014 [
 G                        -1.7616            2.8351            -.62136[.538 [
 I                         4.4855            3.3834             1.3257[.192 [
 I(-1)                    -8.1774            3.1182            -2.6225[.012 [
 INPT                      .62453            2.8836             .21658[.830 [
*******************************************************************************
 R-Squared                    .30922   R-Bar-Squared                    .24642
 S.E. of Regression         11.0390   F-stat.    F(  4,  44)    4.9241[.002 [
 Mean of Dependent Variable  5.8364   S.D. of Dependent Variable     12.7164
 Residual Sum of Squares     5361.8   Equation Log-likelihood      -184.5611
 Akaike Info. Criterion    -189.5611  Schwarz Bayesian Criterion   -194.2907
 DW-statistic                 1.6110
*******************************************************************************



                              Diagnostic Tests
*******************************************************************************
    *Test Statistics  *        LM Version        *         F Version*
*******************************************************************************
*                           *                           *                     *
 *A:Serial Correlation*CHSQ(   4)=   2.4761[.649]*F(   4,  40)=   .53223[.713*[
*                           *                           *                     *
 *B:Functional Form   *CHSQ(   1)=  .015755[.900]*F(   1,  43)=  .013830[.907*[
*                           *                           *                     *
 *C:Normality         *CHSQ(   2)=   .78625[.675]*       Not applicable*
*                           *                           *                     *
 *D:Heteroscedasticity*CHSQ(   1)=   .22770[.633]*F(   1,  47)=   .21943[.642*[
*******************************************************************************
   A:Lagrange multiplier test of residual serial correlation
   B:Ramsey's RESET test using the square of the fitted values
   C:Based on a test of skewness and kurtosis of residuals
   D:Based on the regression of squared residuals on squared fitted values
```

Estimated Long Run Coefficients using the ARDL Approach
ARDL(0,0,0,1) selected based on Akaike Information Criterion

Dependent variable is A
49 observations used for estimation from 1997Q4 to 2009Q4

Regressor	Coefficient	Standard Error	T-Ratio[Prob [
C	13.7145	5.3496	2.5637[.014 [
G	-1.7616	2.8351	-.62136[.538 [
I	-3.6919	3.0927	-1.1938[.239 [
INPT	.62453	2.8836	.21658[.830 [

Estimated Long Run Coefficients using the ARDL Approach
ARDL(6,6,0,0) selected

Dependent variable is C
45 observations used for estimation from 1998Q4 to 2009Q4

Regressor	Coefficient	Standard Error	T-Ratio[Prob [
G	.0073955	.034008	.21746[.829 [
I	.026547	.015184	1.7483[.091 [
A	-.0011194	.8251E-3	-1.3567[.185 [
INPT	.46881	.014123	33.1939[.000 [

Ordinary Least Squares Estimation
Based on Newey-West adjusted S.E.'s Equal weights, truncation lag= 3

Dependent variable is DA
45 observations used for estimation from 1998Q4 to 2009Q4

Regressor	Coefficient	Standard Error	T-Ratio[Prob [
INPT	-.51069	1.7869	-.28579[.777 [
DA(-1)	-.29288	.045569	-6.4272[.000 [
DA(-2)	-.21853	.095918	-2.2783[.031 [
DA(-3)	.014067	.10937	.12862[.899 [
DC(-1)	-40.7995	16.3368	-2.4974[.019 [
DC(-2)	-9.7181	29.0896	-.33407[.741 [
DC(-3)	20.3704	15.9706	1.2755[.213 [
DC(-4)	11.6122	32.2148	.36046[.721 [
DC(-5)	80.0222	26.8791	2.9771[.006 [
DC(-6)	7.4021	17.5620	.42148[.677 [
DG(-1)	-8.5328	3.0490	-2.7985[.009 [
DG(-2)	-2.1090	3.8784	-.54379[.591 [
DG(-3)	2.2842	3.7425	.61034[.547 [
DI(-1)	-8.6310	4.3039	-2.0054[.055 [
DI(-2)	2.7164	2.3738	1.1443[.262 [
DI(-3)	6.7997	1.8745	3.6275[.001 [
ECA(-1)	-.38640	.092333	-4.1848[.000 [

Wald test of restriction(s) imposed on parameters

Based on OLS regression of DA on :
INPT DA(-1) DA(-2) DA(-3) DC(-1 (
DC(-2) DC(-3) DC(-4) DC(-5) DC(-6 (
DG(-1) DG(-2) DG(-3) DI(-1) DI(-2 (
DI(-3) ECA(-1 (
45 observations used for estimation from 1998Q4 to 2009Q4

```
*******************************************************************************
 Coefficients A1 to A17 are assigned to the above regressors respectively     .
 List of restriction(s) for the Wald test                                     :


 a5=0; a6=0; a7=0; a8=0; a9=0; a10=0


*******************************************************************************
 Wald Statistic                CHSQ( 6)=   *NONE                              *


*******************************************************************************
 There is a possibility that restrictions are linearly dependent

                          Wald test of restriction(s) imposed on parameters

*******************************************************************************
 Based on  OLS regression of DA on                                            :
 INPT            DA(-1)          DA(-2)          DA(-3)          DC(-1        (
 DC(-2)          DC(-3)          DC(-4)          DC(-5)          DC(-6        (
 DG(-1)          DG(-2)          DG(-3)          DI(-1)          DI(-2        (
 DI(-3)          ECA(-1                                                       (
 45 observations used for estimation from 1998Q4 to 2009Q4
*******************************************************************************
 Coefficients A1 to A17 are assigned to the above regressors respectively     .
 List of restriction(s) for the Wald test                                     :


 a11=0; a12=0; a13=0


*******************************************************************************
 Wald Statistic                CHSQ( 3)=   8.1814[.042                        [


*******************************************************************************


             Wald test of restriction(s) imposed on parameters
*******************************************************************************
 Based on  OLS regression of DA on                                            :
 INPT            DA(-1)          DA(-2)          DA(-3)          DC(-1        (
 DC(-2)          DC(-3)          DC(-4)          DC(-5)          DC(-6        (
 DG(-1)          DG(-2)          DG(-3)          DI(-1)          DI(-2        (
 DI(-3)          ECA(-1                                                       (
 45 observations used for estimation from 1998Q4 to 2009Q4
*******************************************************************************
 Coefficients A1 to A17 are assigned to the above regressors respectively     .
 List of restriction(s) for the Wald test                                     :

 a14=0; a15=0; a16=0
```

```
*******************************************************************************
 Wald Statistic                CHSQ( 3)=    *NONE                              *


*******************************************************************************
 There is a possibility that restrictions are linearly dependent

                     Wald test of restriction(s) imposed on parameters

*******************************************************************************
 Based on  OLS regression of DA on                                             :
 INPT            DA(-1)          DA(-2)          DA(-3)          DC(-1        (
 DC(-2)          DC(-3)          DC(-4)          DC(-5)          DC(-6        (
 DG(-1)          DG(-2)          DG(-3)          DI(-1)          DI(-2        (
 DI(-3)          ECA(-1                                                       (
 45 observations used for estimation from 1998Q4 to 2009Q4
*******************************************************************************
 Coefficients A1 to A17 are assigned to the above regressors respectively     .
 List of restriction(s) for the Wald test                                     :


 a17=0


*******************************************************************************
 Wald Statistic                CHSQ( 1)=  17.5126[.000                        [


*******************************************************************************


                   Ordinary Least Squares Estimation
     Based on Newey-West adjusted S.E.'s Equal weights, truncation lag= 3
*******************************************************************************
 Dependent variable is DC
 48 observations used for estimation from 1998Q1 to 2009Q4
*******************************************************************************
 Regressor              Coefficient       Standard Error         T-Ratio[Prob [
 INPT                    -.0022566           .016214           -.13918[.890 [
 DC(-1)                    -.21530            .22565           -.95415[.347 [
 DC(-2)                    -.77377            .11175           -6.9239[.000 [
 DC(-3)                    -.36275            .13366           -2.7141[.010 [
 DA(-1)                  -.0015148          .7599E-3           -1.9933[.054 [
 DA(-2)                  -.0018169          .0011787           -1.5414[.132 [
 DA(-3)                  -.0023941          .5757E-3           -4.1586[.000 [
 DG(-1)                  -.0067019           .035836           -.18702[.853 [
 DG(-2)                   -.022474           .017917           -1.2543[.218 [
 DG(-3)                   -.027253          .0097431           -2.7972[.008 [
 DI(-1)                    .011479          .0097946            1.1720[.249 [
 DI(-2)                  -.0075099           .041597           -.18054[.858 [
 DI(-3)                   -.010361           .030515           -.33953[.736 [
 ECC(-1)                   -.34358            .21610           -1.5899[.121 [
*******************************************************************************
```

```
              Wald test of restriction(s) imposed on parameters
*******************************************************************************
 Based on  OLS regression of DC on                                             :
 INPT            DC(-1)          DC(-2)          DC(-3)          DA(-1        (
 DA(-2)          DA(-3)          DG(-1)          DG(-2)          DG(-3        (
 DI(-1)          DI(-2)          DI(-3)          ECC(-1                       (
 48 observations used for estimation from 1998Q1 to 2009Q4
*******************************************************************************
 Coefficients A1 to A14 are assigned to the above regressors respectively     .
 List of restriction(s) for the Wald test                                     :


 a5=0; a6=0; a7=0


*******************************************************************************
 Wald Statistic                CHSQ( 3)=  66.7397[.000                        [


*******************************************************************************

              Wald test of restriction(s) imposed on parameters
*******************************************************************************
 Based on  OLS regression of DC on                                             :
 INPT            DC(-1)          DC(-2)          DC(-3)          DA(-1        (
 DA(-2)          DA(-3)          DG(-1)          DG(-2)          DG(-3        (
 DI(-1)          DI(-2)          DI(-3)          ECC(-1                       (
 48 observations used for estimation from 1998Q1 to 2009Q4
*******************************************************************************
 Coefficients A1 to A14 are assigned to the above regressors respectively     .
 List of restriction(s) for the Wald test                                     :


 a8=0; a9=0; a10=0


*******************************************************************************
 Wald Statistic                CHSQ( 3)=  12.1265[.007                        [


*******************************************************************************

              Wald test of restriction(s) imposed on parameters
*******************************************************************************
 Based on  OLS regression of DC on                                             :
 INPT            DC(-1)          DC(-2)          DC(-3)          DA(-1        (
 DA(-2)          DA(-3)          DG(-1)          DG(-2)          DG(-3        (
 DI(-1)          DI(-2)          DI(-3)          ECC(-1                       (
 48 observations used for estimation from 1998Q1 to 2009Q4
*******************************************************************************
 Coefficients A1 to A14 are assigned to the above regressors respectively     .
 List of restriction(s) for the Wald test                                     :
```

```
 a11=0; a12=0; a13=0


*******************************************************************************
 Wald Statistic                CHSQ( 3)=  33.7438[.000                       [


*******************************************************************************

               Wald test of restriction(s) imposed on parameters
*******************************************************************************
 Based on  OLS regression of DC on                                            :
 INPT            DC(-1)          DC(-2)          DC(-3)          DA(-1        (
 DA(-2)          DA(-3)          DG(-1)          DG(-2)          DG(-3        (
 DI(-1)          DI(-2)          DI(-3)          ECC(-1                       (
 48 observations used for estimation from 1998Q1 to 2009Q4
*******************************************************************************
 Coefficients A1 to A14 are assigned to the above regressors respectively     .
 List of restriction(s) for the Wald test                                     :


 a14=0


*******************************************************************************
 Wald Statistic                CHSQ( 1)=   2.5278[.112                       [


*******************************************************************************
```

Appendix V

Table 6.27:
Detail Results of ARDL Estimates for Nigeria

```
                      Variable Addition Test (OLS case                      (
*****************************************************************************
 Dependent variable is DA
 List of the variables added to the regression                               :
 A(-1)           C(-1)           G(-1)           I(-1                        (
 44 observations used for estimation from 1999Q1 to 2009Q4
*****************************************************************************
 Regressor              Coefficient       Standard Error         T-Ratio[Prob [
 INPT                      -.57538            .79351            -.72510[.484 [
 DA(-1)                     .30138            .18371             1.6405[.129 [
 DA(-2)                     .52927            .19384             2.7305[.020 [
 DA(-3)                     .49098            .25323             1.9389[.079 [
 DA(-4)                     .64193            .24732             2.5956[.025 [
 DA(-5)                     .49969            .21657             2.3073[.041 [
 DA(-6)                     .42537            .23157             1.8369[.093 [
 DA(-7)                     .42068            .18466             2.2781[.044 [
 DC(-1)                    -1.0156            2.2735            -.44671[.664 [
 DC(-2)                     .19188            1.9128             .10031[.922 [
 DC(-3)                    -1.2745            1.8792            -.67821[.512 [
 DC(-4)                    -3.0840            2.5822            -1.1943[.257 [
 DC(-5)                    -3.2555            2.5916            -1.2562[.235 [
 DC(-6)                    -4.6186            2.2044            -2.0951[.060 [
 DC(-7)                    -2.9362            1.7537            -1.6743[.122 [
 DG(-1)                    -.59892            .24518            -2.4428[.033 [
 DG(-2)                    -.56416            .17168            -3.2862[.007 [
 DG(-3)                    -.67830            .17552            -3.8645[.003 [
 DG(-4)                    -.55957            .20487            -2.7313[.020 [
 DG(-5)                    -.45339            .20022            -2.2645[.045 [
 DG(-6)                    -.59358            .19993            -2.9690[.013 [
 DG(-7)                    -.74876            .15535            -4.8198[.001 [
 DI(-1)                    -.11890            .20628            -.57638[.576 [
 DI(-2)                  -.0081754            .19239          -.042494[.967 [
 DI(-3)                    .031046            .18288            .16976[.868 [
 DI(-4)                    -.17121            .16296           -1.0506[.316 [
 DI(-5)                    -.22901            .16602           -1.3794[.195 [
 DI(-6)                    -.25148            .15382           -1.6349[.130 [
 DI(-7)                    -.15068            .11841           -1.2726[.229 [
 A(-1)                     -1.2002            .22598           -5.3114[.000 [
 C(-1)                      2.2795            2.1719            1.0495[.316 [
 G(-1)                      .54267            .26553            2.0437[.066 [
 I(-1)                      .12139            .25077             .48407[.638 [
*****************************************************************************
 Joint test of zero restrictions on the coefficients of additional variables  :
 Lagrange Multiplier Statistic     CHSQ( 4)=  34.5359[.000                    [
 Likelihood Ratio Statistic        CHSQ( 4)=  67.6140[.000                    [
 F Statistic                  F(  4,  11)=  10.0351[.001                    [
*****************************************************************************
```

```
                    Variable Addition Test (OLS case                      (
********************************************************************************
 Dependent variable is DG
 List of the variables added to the regression                              :
 A(-1)          C(-1)          G(-1)          I(-1                          (
 43 observations used for estimation from 1999Q2 to 2009Q4
********************************************************************************
 Regressor             Coefficient       Standard Error         T-Ratio[Prob [
 INPT                      .23871            1.5387             .15514[.882 [
 DG(-1)                    .82966            .64189             1.2925[.244 [
 DG(-2)                    1.0628            .55967             1.8991[.106 [
 DG(-3)                    .69079            .50125             1.3781[.217 [
 DG(-4)                    .40517            .55146             .73472[.490 [
 DG(-5)                    1.3086            .53401             2.4506[.050 [
 DG(-6)                    1.0193            .53935             1.8898[.108 [
 DG(-7)                    .67006            .53049             1.2631[.253 [
 DG(-8)                    .29564            .48650             .60768[.566 [
 DC(-1)                    4.2405            4.6759             .90690[.399 [
 DC(-2)                    4.5926            4.0743             1.1272[.303 [
 DC(-3)                    5.2028            4.2381             1.2276[.266 [
 DC(-4)                    7.1624            4.4833             1.5976[.161 [
 DC(-5)                    1.5124            4.7083             .32121[.759 [
 DC(-6)                    3.1115            5.0191             .61993[.558 [
 DC(-7)                   -2.9914            4.1352            -.72339[.497 [
 DC(-8)                    5.5817            3.2081             1.7399[.133 [
 DA(-1)                    1.7921            .51884             3.4541[.014 [
 DA(-2)                    1.5385            .49569             3.1037[.021 [
 DA(-3)                    1.6252            .66234             2.4538[.050 [
 DA(-4)                    1.2603            .60663             2.0775[.083 [
 DA(-5)                    1.0171            .63100             1.6119[.158 [
 DA(-6)                    1.3091            .62927             2.0803[.083 [
 DA(-7)                    1.0295            .52946             1.9444[.100 [
 DA(-8)                    .83231            .49862             1.6692[.146 [
 DI(-1)                   -.48228            .39958            -1.2070[.273 [
 DI(-2)                    .34802            .45143             .77093[.470 [
 DI(-3)                    .15041            .34346             .43791[.677 [
 DI(-4)                   .049820            .33086             .15058[.885 [
 DI(-5)                   -.66261            .31361            -2.1128[.079 [
 DI(-6)                   -.35184            .32740            -1.0747[.324 [
 DI(-7)                   -.62503            .29699            -2.1046[.080 [
 DI(-8)                  -.040930            .20005            -.20460[.845 [
 A(-1)                    -1.3566            .77607            -1.7480[.131 [
 C(-1)                     5.3076            4.5617             1.1635[.289 [
 G(-1)                    -1.6559            .72664            -2.2788[.063 [
 I(-1)                    -.28615            .49533            -.57769[.584 [
********************************************************************************
 Joint test of zero restrictions on the coefficients of additional variables  :
 Lagrange Multiplier Statistic     CHSQ( 4)=  30.1445[.000                     [
 Likelihood Ratio Statistic        CHSQ( 4)=  51.9194[.000                     [
 F Statistic                  F(  4,   6)=   3.5173[.083                     [
********************************************************************************
```

```
                    Variable Addition Test (OLS case                      (
*****************************************************************************
 Dependent variable is DC
 List of the variables added to the regression                             :
 A(-1)          C(-1)          G(-1)          I(-1                         (
 46 observations used for estimation from 1998Q3 to 2009Q4
*****************************************************************************
 Regressor             Coefficient       Standard Error         T-Ratio[Prob [
 INPT                     .037586           .053155             .70711[.487 [
 DC(-1)                   -.15513            .19106            -.81194[.426 [
 DC(-2)                  -.041983            .21356            -.19658[.846 [
 DC(-3)                   -.27744            .20118            -1.3791[.182 [
 DC(-4)                    .52746            .15462             3.4113[.003 [
 DC(-5)                    .15988            .15736             1.0161[.321 [
 DG(-1)                  -.015547           .019848            -.78330[.442 [
 DG(-2)                  -.030966           .018118            -1.7092[.102 [
 DG(-3)                  -.038044           .018817            -2.0217[.056 [
 DG(-4)                  -.022856           .021852            -1.0459[.307 [
 DG(-5)                  -.037338           .018571            -2.0105[.057 [
 DA(-1)                  -.024642           .022762            -1.0826[.291 [
 DA(-2)                  -.068587           .024491            -2.8005[.011 [
 DA(-3)                  -.030492           .024305            -1.2546[.223 [
 DA(-4)                  -.016485           .023365            -.70552[.488 [
 DA(-5)                  -.061624           .021318            -2.8906[.009 [
 DI(-1)                  -.024030           .017114            -1.4041[.175 [
 DI(-2)                  -.011384           .013832            -.82304[.420 [
 DI(-3)                  .0039194           .012017             .32617[.748 [
 DI(-4)                   .035113           .010176             3.4506[.002 [
 DI(-5)                  .0084712           .010062             .84193[.409 [
 A(-1)                    .021286           .020584             1.0341[.313 [
 C(-1)                    -.27699            .13678            -2.0251[.056 [
 G(-1)                    .046128           .018708             2.4657[.022 [
 I(-1)                   .0047454           .017196             .27596[.785 [
*****************************************************************************
 Joint test of zero restrictions on the coefficients of additional variables  :
 Lagrange Multiplier Statistic     CHSQ( 4)=  19.4181[.001                    [
 Likelihood Ratio Statistic        CHSQ( 4)=  25.2269[.000                    [
 F Statistic                   F(  4,  21)=   3.8351[.017                    [
*****************************************************************************

                    Variable Addition Test (OLS case                      (
*****************************************************************************
 Dependent variable is DI
 List of the variables added to the regression                             :
 A(-1)          C(-1)          G(-1)          I(-1                         (
 46 observations used for estimation from 1998Q3 to 2009Q4
*****************************************************************************
 Regressor             Coefficient       Standard Error         T-Ratio[Prob [
 INPT                      2.8885            .77894             3.7082[.001 [
 DI(-1)                    .53251            .25078             2.1234[.046 [
 DI(-2)                    .37586            .20269             1.8544[.078 [
 DI(-3)                    .38200            .17609             2.1693[.042 [
 DI(-4)                    .27645            .14912             1.8539[.078 [
 DI(-5)                    .44808            .14745             3.0389[.006 [
 DG(-1)                   -.25823            .29085            -.88786[.385 [
 DG(-2)                   -.31973            .26550            -1.2043[.242 [
 DG(-3)                   -.69205            .27575            -2.5097[.020 [
 DG(-4)                   .094335            .32022             .29460[.771 [
 DG(-5)                    .10448            .27214             .38391[.705 [
 DA(-1)                    .21685            .33356             .65012[.523 [
 DA(-2)                    .24481            .35889             .68212[.503 [
 DA(-3)                  -.056594            .35617            -.15890[.875 [
```

```
DA(-4)                  -.042068            .34240           -.12286[.903 [
DA(-5)                    .42246            .31240            1.3523[.191 [
DC(-1)                    1.7246            2.7999            .61597[.545 [
DC(-2)                    3.9409            3.1296            1.2593[.222 [
DC(-3)                    9.2567            2.9481            3.1399[.005 [
DC(-4)                    5.1049            2.2658            2.2530[.035 [
DC(-5)                    8.0535            2.3059            3.4925[.002 [
A(-1)                    -.12672            .30164           -.42009[.679 [
C(-1)                    -6.1577            2.0044           -3.0721[.006 [
G(-1)                     .61761            .27415            2.2528[.035 [
I(-1)                    -.98224            .25200           -3.8978[.001 [
*******************************************************************************
Joint test of zero restrictions on the coefficients of additional variables  :
Lagrange Multiplier Statistic     CHSQ( 4)=  21.3761[.000                     [
Likelihood Ratio Statistic        CHSQ( 4)=  28.7464[.000                     [
F Statistic                    F(  4,  21)=   4.5575[.008                     [
*******************************************************************************

            Autoregressive Distributed Lag Estimates
          ARDL(5,6,7,0) selected based on R-BAR Squared Criterion
*******************************************************************************
Dependent variable is A
45 observations used for estimation from 1998Q4 to 2009Q4
*******************************************************************************
Regressor              Coefficient       Standard Error         T-Ratio[Prob [
A(-1)                      .50645             .17716            2.8588[.009 [
A(-2)                      .30434             .18796            1.6191[.119 [
A(-3)                     -.096138            .20489           -.46921[.643 [
A(-4)                      .20684             .19468            1.0625[.299 [
A(-5)                     -.48872             .19261           -2.5373[.018 [
C                          .21934             1.4801            .14819[.883 [
C(-1)                      4.1993             1.6623            2.5263[.019 [
C(-2)                     -2.5092             1.6135           -1.5551[.134 [
C(-3)                     -2.8826             1.2404           -2.3239[.029 [
C(-4)                      3.2451             1.7880            1.8149[.083 [
C(-5)                     -3.8465             1.6528           -2.3273[.029 [
C(-6)                      4.5747             1.7484            2.6165[.015 [
I                          .34572             .10733            3.2209[.004 [
I(-1)                     -.33176             .11289           -2.9386[.007 [
I(-2)                      .21802             .10086            2.1615[.041 [
I(-3)                     -.096606            .097121           -.99469[.330 [
I(-4)                      .11241             .093968           1.1962[.244 [
I(-5)                     -.21702             .089407          -2.4273[.023 [
I(-6)                      .26500             .10977            2.4143[.024 [
I(-7)                      .084407            .068140           1.2387[.228 [
G                         -.22674             .12246           -1.8515[.077 [
INPT                      -1.0959             .56155           -1.9516[.063 [
*******************************************************************************
R-Squared                      .77440   R-Bar-Squared                    .56842
S.E. of Regression             .46689   F-stat.    F( 21,  23)    3.7595[.001 [
Mean of Dependent Variable     .26981   S.D. of Dependent Variable      .71069
Residual Sum of Squares       5.0136   Equation Log-likelihood       -14.4759
Akaike Info. Criterion      -36.4759   Schwarz Bayesian Criterion    -56.3492
DW-statistic                   2.1907
*******************************************************************************
```

Diagnostic Tests

*Test Statistics	LM Version	F Version
*A:Serial Correlation	CHSQ(4)= 14.2990[.006]	F(4, 19)= 2.2123[.106]
*B:Functional Form	CHSQ(1)= 4.1736[.041]	F(1, 22)= 2.2490[.148]
*C:Normality	CHSQ(2)= 1.7334[.420]	Not applicable
*D:Heteroscedasticity	CHSQ(1)= 2.0037[.157]	F(1, 43)= 2.0038[.164]

A:Lagrange multiplier test of residual serial correlation
B:Ramsey's RESET test using the square of the fitted values
C:Based on a test of skewness and kurtosis of residuals
D:Based on the regression of squared residuals on squared fitted values

Estimated Long Run Coefficients using the ARDL Approach
ARDL(5,6,7,0) selected based on R-BAR Squared Criterion

Dependent variable is A
45 observations used for estimation from 1998Q4 to 2009Q4

Regressor	Coefficient	Standard Error	T-Ratio[Prob]
C	5.2892	2.5040	2.1123[.046]
I	.67024	.31184	2.1493[.042]
G	-.39974	.22722	-1.7592[.092]
INPT	-1.9321	.98885	-1.9539[.063]

Estimated Long Run Coefficients using the ARDL Approach
ARDL(5,0,5,4) selected based on R-BAR Squared Criterion

Dependent variable is C
47 observations used for estimation from 1998Q2 to 2009Q4

Regressor	Coefficient	Standard Error	T-Ratio[Prob]
A	-.075990	.15496	-.49039[.628]
I	.016093	.12093	.13308[.895]
G	.12473	.16435	.75892[.454]
INPT	.21711	.19432	1.1173[.273]

Ordinary Least Squares Estimation

Dependent variable is DA
48 observations used for estimation from 1998Q1 to 2009Q4

Regressor	Coefficient	Standard Error	T-Ratio[Prob]
INPT	-.1032E-3	.077184	-.0013368[.999]
DA(-1)	-.34131	.17316	-1.9710[.057]
DA(-2)	.048539	.17393	.27907[.782]
DA(-3)	-.14945	.15863	-.94212[.353]
DC(-1)	-1.0464	1.0543	-.99255[.328]
DC(-2)	-1.4082	.56355	-2.4988[.017]
DC(-3)	-.87514	.85993	-1.0177[.316]
DG(-1)	-.042071	.14036	-.29974[.766]
DG(-2)	-.19069	.14053	-1.3569[.184]
DG(-3)	-.15032	.13377	-1.1237[.269]
DI(-1)	-.15026	.086280	-1.7415[.091]

```
 DI(-2)                   -.048900            .065476            -.74683[.460 [
 DI(-3)                   -.061221            .064173            -.95399[.347 [
 ECA(-1)                   -.23022             .12368            -1.8614[.071 [
*******************************************************************************
 R-Squared                    .54932   R-Bar-Squared                    .37700
 S.E. of Regression           .52546   F-stat.    F( 13,  34)    3.1878[.003 [
 Mean of Dependent Variable  .0037651   S.D. of Dependent Variable      .66573
 Residual Sum of Squares      9.3877   Equation Log-likelihood       -28.9459
 Akaike Info. Criterion      -42.9459   Schwarz Bayesian Criterion    -56.0443
 DW-statistic                 1.7772
*******************************************************************************


                            Diagnostic Tests
*******************************************************************************
    *Test Statistics  *        LM Version        *         F Version*
*******************************************************************************
*                           *                           *                       *
 *A:Serial Correlation*CHSQ(   4)=   8.0255[.091]*F(   4,  30)=   1.5057[.226*[
*                           *                           *                       *
 *B:Functional Form   *CHSQ(   1)=   .19457[.659]*F(   1,  33)=   .13431[.716*[
*                           *                           *                       *
 *C:Normality         *CHSQ(   2)=   1.9460[.378]*       Not applicable*
*                           *                           *                       *
 *D:Heteroscedasticity*CHSQ(   1)=   .34148[.559]*F(   1,  46)=   .32960[.569*[
*******************************************************************************
   A:Lagrange multiplier test of residual serial correlation
   B:Ramsey's RESET test using the square of the fitted values
   C:Based on a test of skewness and kurtosis of residuals
   D:Based on the regression of squared residuals on squared fitted values


              Wald test of restriction(s) imposed on parameters
*******************************************************************************
 Based on  OLS regression of DA on                                             :
 INPT            DA(-1)          DA(-2)          DA(-3)          DC(-1        (
 DC(-2)          DC(-3)          DG(-1)          DG(-2)          DG(-3        (
 DI(-1)          DI(-2)          DI(-3)          ECA(-1                       (
 48 observations used for estimation from 1998Q1 to 2009Q4
*******************************************************************************
 Coefficients A1 to A14 are assigned to the above regressors respectively     .
 List of restriction(s) for the Wald test                                     :


 a5=0; a6=0; a7=0


*******************************************************************************
 Wald Statistic                CHSQ( 3)=   6.6856[.083                       [


*******************************************************************************
```

Wald test of restriction(s) imposed on parameters

Based on OLS regression of DA on :
INPT DA(-1) DA(-2) DA(-3) DC(-1 (
DC(-2) DC(-3) DG(-1) DG(-2) DG(-3 (
DI(-1) DI(-2) DI(-3) ECA(-1 (
48 observations used for estimation from 1998Q1 to 2009Q4

Coefficients A1 to A14 are assigned to the above regressors respectively .
List of restriction(s) for the Wald test :

a8=0; a9=0; a10=0

Wald Statistic CHSQ(3)= 2.3009[.512 [

Wald test of restriction(s) imposed on parameters

Based on OLS regression of DA on :
INPT DA(-1) DA(-2) DA(-3) DC(-1 (
DC(-2) DC(-3) DG(-1) DG(-2) DG(-3 (
DI(-1) DI(-2) DI(-3) ECA(-1 (
48 observations used for estimation from 1998Q1 to 2009Q4

Coefficients A1 to A14 are assigned to the above regressors respectively .
List of restriction(s) for the Wald test :

a11=0; a12=0; a13=0

Wald Statistic CHSQ(3)= 3.1269[.372 [

Wald test of restriction(s) imposed on parameters

Based on OLS regression of DA on :
INPT DA(-1) DA(-2) DA(-3) DC(-1 (
DC(-2) DC(-3) DG(-1) DG(-2) DG(-3 (
DI(-1) DI(-2) DI(-3) ECA(-1 (
48 observations used for estimation from 1998Q1 to 2009Q4

Coefficients A1 to A14 are assigned to the above regressors respectively .
List of restriction(s) for the Wald test :

a13=0

Wald Statistic CHSQ(1)= .91011[.340 [

Ordinary Least Squares Estimation

Dependent variable is DC
48 observations used for estimation from 1998Q1 to 2009Q4

Regressor	Coefficient	Standard Error	T-Ratio[Prob [
INPT	.0039881	.010742	.37127[.713 [
DC(-1)	-.55102	.13273	-4.1514[.000 [
DC(-2)	-.67074	.081252	-8.2550[.000 [
DC(-3)	-.62885	.12129	-5.1848[.000 [
DA(-1)	.1306E-3	.023424	.0055740[.996 [
DA(-2)	.0043543	.024413	.17836[.859 [
DA(-3)	.0091728	.022294	.41145[.683 [
DG(-1)	-.036395	.018454	-1.9722[.057 [
DG(-2)	-.066356	.017922	-3.7025[.001 [
DG(-3)	-.043305	.018578	-2.3309[.026 [
DI(-1)	-.017716	.0097065	-1.8252[.077 [
DI(-2)	-.023838	.0077250	-3.0858[.004 [
DI(-3)	-.019489	.0083888	-2.3233[.026 [
ECC(-1)	-.15701	.082747	-1.8975[.066 [

R-Squared	.95330	R-Bar-Squared	.93544
S.E. of Regression	.073623	F-stat. F(13, 34)	53.3870[.000 [
Mean of Dependent Variable	.0023600	S.D. of Dependent Variable	.28976
Residual Sum of Squares	.18429	Equation Log-likelihood	65.3895
Akaike Info. Criterion	51.3895	Schwarz Bayesian Criterion	38.2910
DW-statistic	1.4603		

Diagnostic Tests

*Test Statistics	LM Version	F Version
*A:Serial Correlation	CHSQ(4)= 15.0929[.005]	F(4, 30)= 3.4399[.020
*B:Functional Form	CHSQ(1)= 1.0037[.316]	F(1, 33)= .70476[.407
*C:Normality	CHSQ(2)= .49142[.782]	Not applicable
*D:Heteroscedasticity	CHSQ(1)= .0031644[.955]	F(1, 46)= .0030328[.956

A:Lagrange multiplier test of residual serial correlation
B:Ramsey's RESET test using the square of the fitted values
C:Based on a test of skewness and kurtosis of residuals
D:Based on the regression of squared residuals on squared fitted values

Ordinary Least Squares Estimation
Based on Newey-West adjusted S.E.'s Equal weights, truncation lag= 3

Dependent variable is DC
48 observations used for estimation from 1998Q1 to 2009Q4

Regressor	Coefficient	Standard Error	T-Ratio[Prob [
INPT	.0039881	.014603	.27310[.786 [
DC(-1)	-.55102	.0024159	-228.0805[.000 [
DC(-2)	-.67074	.047543	-14.1082[.000 [
DC(-3)	-.62885	.059770	-10.5211[.000 [
DA(-1)	.1306E-3	.016796	.0077733[.994 [
DA(-2)	.0043543	.018192	.23935[.812 [
DA(-3)	.0091728	.019762	.46416[.645 [
DG(-1)	-.036395	.010253	-3.5497[.001 [
DG(-2)	-.066356	.0072167	-9.1948[.000 [
DG(-3)	-.043305	.012156	-3.5626[.001 [
DI(-1)	-.017716	.0063784	-2.7775[.009 [
DI(-2)	-.023838	.0040050	-5.9520[.000 [
DI(-3)	-.019489	.0084310	-2.3116[.027 [
ECC(-1)	-.15701	.059119	-2.6558[.012 [

Wald test of restriction(s) imposed on parameters

Based on OLS regression of DC on :

INPT	DC(-1)	DC(-2)	DC(-3)	DA(-1	(
DA(-2)	DA(-3)	DG(-1)	DG(-2)	DG(-3	(
DI(-1)	DI(-2)	DI(-3)	ECC(-1		(

48 observations used for estimation from 1998Q1 to 2009Q4

Coefficients A1 to A14 are assigned to the above regressors respectively .
List of restriction(s) for the Wald test :

a5=0; a6=0; a7=0

Wald Statistic CHSQ(3)= .21706[.975 [

```
*******************************************************************************

              Wald test of restriction(s) imposed on parameters
*******************************************************************************
 Based on  OLS regression of DC on                                             :
 INPT            DC(-1)          DC(-2)          DC(-3)          DA(-1        (
 DA(-2)          DA(-3)          DG(-1)          DG(-2)          DG(-3        (
 DI(-1)          DI(-2)          DI(-3)          ECC(-1                       (
 48 observations used for estimation from 1998Q1 to 2009Q4
*******************************************************************************
 Coefficients A1 to A14 are assigned to the above regressors respectively     .
 List of restriction(s) for the Wald test                                     :


 a8=0; a9=0; a10=0


*******************************************************************************
 Wald Statistic                CHSQ( 3)=   *NONE                             *


*******************************************************************************
 There is a possibility that restrictions are linearly dependent



              Wald test of restriction(s) imposed on parameters
*******************************************************************************
 Based on  OLS regression of DC on                                             :
 INPT            DC(-1)          DC(-2)          DC(-3)          DA(-1        (
 DA(-2)          DA(-3)          DG(-1)          DG(-2)          DG(-3        (
 DI(-1)          DI(-2)          DI(-3)          ECC(-1                       (
 48 observations used for estimation from 1998Q1 to 2009Q4
*******************************************************************************
 Coefficients A1 to A14 are assigned to the above regressors respectively     .
 List of restriction(s) for the Wald test                                     :


 a11=0; a12=0; a13=0


*******************************************************************************
 Wald Statistic                CHSQ( 3)=  38.9005[.000                       [


*******************************************************************************
```

```
            Wald test of restriction(s) imposed on parameters
*******************************************************************************
 Based on  OLS regression of DC on                                            :
 INPT            DC(-1)          DC(-2)          DC(-3)          DA(-1        (
 DA(-2)          DA(-3)          DG(-1)          DG(-2)          DG(-3        (
 DI(-1)          DI(-2)          DI(-3)          ECC(-1                       (
 48 observations used for estimation from 1998Q1 to 2009Q4
*******************************************************************************
 Coefficients A1 to A14 are assigned to the above regressors respectively     .
 List of restriction(s) for the Wald test                                     :


 a14=0


*******************************************************************************
 Wald Statistic                CHSQ( 1)=   7.0533[.008                        [


*******************************************************************************
```

Appendix W

Figure 6.1:
Sample of Developmental Project by the IDB in Africa

IDB SUCCESS STORY SERIES: NO.2 (JUNE 2011)

A lifeline across the Niger River: the bridge at Gao, Mali

Islamic Development Bank

Together we build a better future

Until a few years ago, crossing the Niger River at Gao meant waiting for a ferry that might or might not be operating. This hindered progress and discouraged trade. Now, a new bridge has thrown a lifeline to the once isolated Gao Region in eastern Mali.

Mali is a land-locked country in West Africa. At one time the city of Gao was a thriving stop on the caravan route between southern Africa, and the Mediterranean and Middle East. To breathe new life into the region and link north-south and east-west routes in Mali to the modern network of roads extending across Africa, the Niger River needed to be bridged at Gao.

The Government of Mali approached the Islamic Development Bank (IDB) for a loan to build a bridge to replace the ferry service. The new bridge cuts travel times and costs, and encourages trade between countries on the southern rim of the Sahara and North Africa, as well as between regions in Mali. The bridge also opens opportunities to develop mineral deposits in the Gao Region. Not least, the bridge lessens poverty and has socioeconomic benefits – boosting agricultural production, creating jobs, and providing access to health and other services.

The Gao Bridge replaced a ferry and has made crossing the River Niger at Gao much quicker and easier.

A slow and costly crossing

Crossing the Niger River at Gao used to be slow, costly and sometimes dangerous. A 70-ton ferry operated between 6 am and 6 pm, handling at most 76 vehicles a day. The restricted service and limited capacity meant that the absence of a bridge was a major bottleneck. Passengers and vehicles had lengthy waits, especially at peak times. The crossing itself took nearly an hour.

At times the ferry was out-of-service for weeks at a time because of mechanical problems or accidents. During the dry season there was often not enough water in the river to operate the ferry safely.

Ferry costs meant that prices were higher than in other parts of Mali. The time and expense involved in crossing the river also meant that development by-passed Gao.

The bridge

The Islamic Development Bank (IDB) and the Government of Mali financed the construction of a bridge across the Niger River to connect Gao with other regions and neighbouring countries. A soft loan from IDB provided nearly 90% of the cost and the Government of Mali financed the rest. The total amount for building the 290 metre long bridge and 15.12 kilometres of access roads was US$16.2 million. The bridge was opened to traffic in August 2006.

The missing link

The city of Gao, the meeting point of the roads from the Republic of Niger through Labezanga, from Algeria through Kidal and Bourem, and from other parts of Mali through Sévaré and Bamako, is a major economic centre in the east of Mali.

The new bridge links the Trans-Saharan Kidal-Tamanrasset-Algiers highway, the Mali road network, and routes into the Republic of Niger and Burkina Faso.

A boost to the economy of eastern Mali

Providing assistance to build the bridge is part of the Bank's strategy to support regional integration in Africa. When completed, such projects ease the movement of people and goods between countries, thereby boosting their economies.

The new bridge has opened up eastern Mali, and particularly the Gao Region. Villagers, nomads, traders and investors are flocking to Gao to take advantage of new opportunities.

"I can clearly see more business activities in the region and especially interest has been expressed for investment in different mining projects."

Mr. George Togo, Director, Governorate Cabinet, Gao, speaking to the IDB, May 2011

A shot in the arm for commerce

The bridge is a shot in the arm for business, trade and commerce. Trade within the region and with other regions is growing. The Gao Region is no longer isolated but is becoming integrated with other regions.

Gao is becoming an important hub in regional and continental transport networks. In the six years since the bridge was completed, 10 companies have set up in Gao to transport people and goods. The Gao cattle market is flourishing as cattle can now be readily trucked to Algeria, Burkina Faso, Niger and even Nigeria. Gao's main products, livestock, fish and handicrafts, can now be moved quickly to other regions.

Gao relies heavily on basic foods from the southern regions of Mali and neighbouring countries because most of the region is desert and agriculture is limited. Before the bridge was built prices of basic foods and daily necessities were higher than in other regions. The bridge has helped to bring down prices substantially and make previously scarce goods abundantly available in local markets.

Passenger and vehicle traffic has increased considerably since the bridge was completed. A large number of people, cars, trucks and carts cross the bridge every day. Revenue from customs duties has risen. New markets and businesses have sprung up in the immediate area and beyond. The city of Gao is expanding. New technologies are being brought in – houses are being built of concrete blocks rather than wood and mud brick.

Near the bridge itself, new hotels and markets are already forming the core of what will become a regional commercial centre.

A catalyst for development

In saving time and reducing transport costs the bridge has helped advance other regional projects such as the construction of the Taoussa Dam. The bridge allows heavy construction equipment to be moved to the dam site, something which would have presented enormous difficulties before the bridge was built. The multipurpose dam will provide irrigation and drinking water, and also generate electricity which will provide the reliable power supplies essential for development to places as far away as 200 kilometres.

Quick, safe and cheap

The bridge makes crossing the river much quicker. Ferry accidents and the loss of peoples' lives, trucks and animals are things of the past. The crossing is also a lot cheaper. The small toll charged to cover maintenance of the bridge is much more affordable than the US$7-8 charged for a vehicle to cross on the ferry.

"...this bridge [has] brought a considerable time saving – two minutes as compared to hours needed for crossing the river in the old days..."
Mr. Chierno Aboubacar Cisse, Economic and Financial Advisor, Governorate of Gao

Socioeconomic benefits

The bridge gives people living to the south of the river quick and easy access to health and other facilities in Gao at all times of day or night. They no longer need to queue or worry about whether or not the ferry is operating.

"Nobody can completely comprehend the numerous benefits this bridge has brought for the whole region. It has positively impacted on the socioeconomic life of the poor and economically deprived people of this region." *Mr. George Togo, Director, Governorate Cabinet, Gao, speaking to the IDB, May 2011*

The absence of a bridge across the River Niger was a major bottleneck, hindering travel between Gao and other regions of Mali.

The Gao Bridge integrates communities, promotes harmony and deepens relationships and interactions among the diverse peoples along the banks of the Niger River.

Success factors

Consistent with Government of Mali development strategy
Building the bridge at Gao was consistent with the Government of Mali's development strategy to boost growth by integrating remote regions into national and regional economies.

Aligned with wider IDB strategy
The IDB strategy for the transport sector in Mali is helping the government integrate the national road network in its eight regions and improve links with seven neighbouring countries. The IDB has also financed strategic roads linking Mali to the port city of Dakar in Senegal. The Gao Bridge is a key link in the south-north road built by IDB more than 30 years ago.

Badly needed
The absence of the bridge was a bottleneck. The bridge was badly needed to bring down transport costs, reduce travel times, link Gao to the rest of the country and neighbouring countries, and encourage trade and investment.

Building on progress

There are still steps to be taken to maximise the benefits from the bridge. Installing a weighing station to enforce the axle load limit will prevent damage from excessive loads. Although the National Directorate of Roads gained valuable hands-on experience while the bridge was being built, strengthening its capacity further will increase the likelihood that the bridge will be properly maintained and resurfaced regularly. Similarly, strengthening the capacity of the Road Data Services and setting up an archiving system will provide ongoing data for managing and developing the national road network in which the bridge is a key link.

"...a dream that has come true"

Professor Salahadine S. Maiga, resident of Gao

IDB support played a key role in linking the remote eastern region of Mali to the national and regional road networks. Like many other strategic IDB projects, the bridge will have a positive ripple effect on development well beyond the project itself – fulfilling the IDB vision of socioeconomic development and prosperity. Not least, the citizens of Gao are proud of the bridge. They feel 'connected' and have high expectations of realising the benefits the bridge will bring.

Acknowledgements
This success story document is based on the Post-Project Evaluation Report MLI 0076 prepared by the Group Operations Evaluation Department (GOED), IDB Sha'ban 1431H (August 2010). The story was supplemented by additional material prepared from a field visit by Dr. Waleed Ahmad Addas and Br. Aamir Ghani Mir (May 2011). The preparation of the document was managed by Dr. Intizar Hussain and Br. Faisal Siddik of the Compliance and Development Effectiveness Division of the Operations Policy and Services Department (OPSD). All direct and indirect contributions by colleagues at the Bank and partners for successful implementation and evaluation of the project, and for preparation of this document, are gratefully acknowledged.

Contact for any query
Manager, Compliance and Development Effectiveness (CDE) Division
Operations Policy and Services Department (OPSD)
Islamic Development Bank
13th Floor, Main Building
PO Box 5925, Jeddah 21432, Saudi Arabia

Email: ihussain@isdb.org
Tel: (+966 2) 646 6907
Fax: (+966 2) 646 6966
www.isdb.org

Writing, design and layout by Scriptoria Sustainable Development Communications
www.scriptoria.co.uk